

2021 Hazardous Waste Scanning Project

File Form Naming Convention.

(File_Type).(Program).(Site_Number).(YYYY-MM-DD).(File_Name).pdf

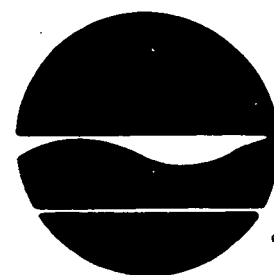
Note 1: Each category is separated by a period "."

Note 2: Each word within category is separated by an underscore "_"

Specific File Naming Convention Label:

report. HW. 932008. 1993-04-01. Preliminary Site Assessment - Supplemental.pdf

Copy # 2



PRELIMINARY SITE ASSESSMENT
SUPPLEMENTAL INVESTIGATION REPORT

Cayuga Island Site, Niagara Falls
Niagara County, New York
(Site Registry No. 9-32-008)



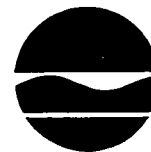
Dvirka and Bartilucci

Consulting Engineers

APRIL 1993

Berkat

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233



Thomas C. Jorling
Commissioner

M E M O R A N D U M

TO: Joe Sciascia, Reg. Haz. Waste Remed. Engineer, Region 9
FROM: Walter Demick, Chief, Bureau of Hazardous Site Control W
RE: Finalized PSA Supplemental Investigation Report
DATE: MAY 19 1993

Attached, please find 3 copies of the finalized PSA supplemental Investigation Report for the site listed below.

<u>Site Name</u>	<u>Site ID No.</u>
Cayuga Island	932008

If you have any questions concerning this report please contact Steve Perrigo, of my staff, at (518) 457-9538.

Attachment

RECEIVED
MAY 21 1993
N.Y.S. DEPT. OF
ENVIRONMENTAL CONSERVATION
REGION 9

0281 07 453

**PRELIMINARY SITE ASSESSMENT
SUPPLEMENTAL INVESTIGATION**

**CAYUGA ISLAND SITE
CITY OF NIAGARA FALLS
NIAGARA COUNTY, NEW YORK**

(SITE REGISTRY NO. 9-32-008)

PREPARED FOR

**NEW YORK STATE DEPARTMENT
OF ENVIRONMENTAL CONSERVATION**

**BY
DVIRKA AND BARTILUCCI
CONSULTING ENGINEERS
SYOSSET, NEW YORK**

APRIL 1993



CAYUGA ISLAND SITE SUPPLEMENTAL INVESTIGATION

TABLE OF CONTENTS

<u>Section</u>	<u>Title</u>	<u>Page</u>
S.0	EXECUTIVE SUMMARY	S-1
1.0	INTRODUCTION	1-1
1.1	Project Objective	1-1
1.2	Previous Field Activities and Findings	1-3
1.3	Supplemental Investigation Field Activities	1-3
2.0	STUDY AREA INVESTIGATION	2-1
2.1	Field Activities/Site Characterization	2-1
2.1.1	Borehole Construction	2-1
2.1.2	Surface Soil Sampling	2-1
2.1.3	Air Monitoring	2-4
2.1.4	Surveying and Mapping	2-4
2.2	Health and Safety Program	2-4
2.3	Quality Assurance/Quality Control and Sampling Program	2-5
2.4	Data Validation	2-6
3.0	NATURE AND EXTENT OF CONTAMINATION	3-1
3.1	Results of Site Characterization	3-1
3.1.1	Subsurface Soils	3-1
3.1.2	Surface Soils	3-7
3.1.3	Air Monitoring	3-7
3.2	Data Validation	3-7
4.0	CONCLUSIONS AND RECOMMENDATIONS	4-1

<u>Appendices</u>	<u>Title</u>
APPENDIX A	Field Documentation
A-1	Boring Logs
A-2	Daily Field Activity Reports
A-3	Sample Information Records
A-4	Chain of Custody Forms
A-5	Additional Information
APPENDIX B	Data Validation Report

LIST OF FIGURES

<u>Number</u>	<u>Title</u>	<u>Page</u>
1-1	Site Location Map	1-2
2-1	Boring Location Map	2-2
3-1	Surface/Subsurface Soil Samples with Elevated Levels of Pesticides	3-8

LIST OF TABLES

<u>Number</u>	<u>Title</u>	<u>Page</u>
2-1	Boring Locations	2-3
3-1	NYSDEC Criteria for EPTOX Analysis	3-2
3-2	Borehole Soil Sampling - Pesticide/PCB	3-3
3-3	Results of Lead and Mercury Analysis - Borehole Soil Sampling	3-5
3-4	Surface Soil Sample and Corresponding Boring Location	3-9
3-5	Surface Soil Sampling - Pesticide/PCB	3-10
3-6	Results of Lead and Mercury Analysis - Surface Soil Sampling	3-11
3-7	Data Validation Summary	3-13

Summary



S.0 EXECUTIVE SUMMARY

As part of New York State's program to investigate and remediate hazardous waste sites, the New York State Department of Environmental Conservation (NYSDEC) has entered into a contract with the firm of Dvirka and Bartilucci Consulting Engineers of Syosset, New York to undertake a Preliminary Site Assessment (PSA) and Supplemental Investigation for the Cayuga Island site, located in Niagara Falls, New York. The PSA and Supplemental Investigation for this site was performed with funds allocated under the New York State Superfund program. The findings of this investigation are presented in the PSA Report for the Cayuga Island site dated July 1992. Based upon the results of the PSA, it was determined that additional investigation in the western portion of the island was required in order to address elevated levels of contaminants found in the subsurface soils.

The primary focus of the PSA was the western and southern portions of Cayuga Island. It has been reported that prior to 1930, the western end of Cayuga Island was extended approximately 250 yards into the Niagara River by depositing clean fill and industrial material (sand, abrasives and broken concrete). From 1958 to 1962, the western end was widened by placement of clean fill and industrial wastes. The companies who may have been the source of these materials are reported to be Carborundum, Union Carbide, Hooker, Olin and Pittsburgh Metallurgical.

Numerous small areas along the southern shore of the island also received fill material to extend residential yards and fill in low lying areas. The source(s) of this fill is unknown.

The purpose of the PSA was to evaluate the quality of the fill in the western and southern portions of Cayuga Island and determine the presence or absence of hazardous waste at this site. This was accomplished by constructing 18 soil borings on the island and collection of subsurface soil samples for chemical analysis. A detailed description of the findings and conclusions of the PSA are presented in the PSA report dated July 1992.

The PSA determined that both the southern and western portions of the island contained a nonhomogeneous fill. Results of the analytical testing conducted on samples from the southern portion did not indicate significantly contaminated material. None of the samples exceeded NYSDEC criteria for EP Toxicity (TOX) analysis. Three "background" samples were collected in

order to obtain information about native soil quality on-site. Results of the sample analysis and visual inspection of the borings indicated the subsurface soil found in the "background" samples was also fill, and representative native soil quality was not determined. Based upon the results of the PSA, additional sampling in the southern area was not found to be necessary and the supplemental investigation focused on the western portion. Results of both the PSA and the Supplemental Investigation undertaken in the western portion are presented in this report.

The purpose of this Supplemental Investigation was to address concerns regarding contamination in the western portion of Cayuga Island, which is described below. This was accomplished by constructing twelve borings and collecting six surface soil samples and twelve subsurface soil samples for chemical analysis. The following is a summary of the findings and conclusions obtained during the PSA and the Supplemental Investigation.

Various types of materials were observed in all of the borings constructed in the western portion during both the PSA and Supplemental Investigation, including concrete, brick and asphalt fragments, rubber tubing, white gravel, glass, wood and styrofoam, and two samples obtained from the borings indicated the presence of a small white granular material in the fill. The material found in the borings varied from one sample to the next indicating a nonhomogeneous characteristic of the fill.

The results of the analysis of soil samples from the PSA indicated the presence of trace concentrations of volatile organic compounds in all the samples collected. The highest level of total volatile organics was 0.4 mg/kg. Semivolatile organic compounds, primarily polycyclic aromatic hydrocarbons (PAHs), were detected during the PSA. The highest level of total PAHs detected in this area was 16.8 mg/kg. Results for volatile organic and semivolatile organic compounds during the PSA did not warrant the analysis of these compounds during the Supplemental Investigation.

Polychlorinated biphenyls (PCBs) were detected in five samples from the western area during the PSA and were generally found in low concentrations except for one sample which had an elevated level of 140 mg/kg. According to 6NYCRR Part 371, soils containing greater than 50 mg/kg of PCBs are considered hazardous. Additional sampling conducted during the Supplemental Investigation to determine the extent of PCB contamination did not indicate the presence of PCBs in any of the samples collected. Pesticides were detected in low levels during the PSA and at elevated concentrations during the Supplemental Investigation in both the

surface and subsurface soils. Three subsurface soil samples collected during the Supplemental Investigation had levels of pesticides greater than 1 mg/kg and one subsurface soil did exceed the EPTOX criteria for Endrin.

Metals were found in low concentrations, except for a few samples. The highest levels of metals, lead and mercury, were found at 774 mg/kg and 133 mg/kg, respectively during the PSA. Results from the Supplemental Investigation did not detect elevated levels of lead but did confirm the presence of elevated levels of mercury. None of the samples analyzed exceeded the limits for EP Toxicity and, therefore, none of the fill was defined as a hazardous waste based upon elevated levels of metals.

In general, the Supplemental Investigation identified areas of elevated levels of mercury. It did not confirm the presence of PCBs in the fill which may indicate very localized PCB contamination. Additionally, elevated levels of lead found in the fill during the PSA were not confirmed during the Supplemental Investigation. The only compound detected at a level greater than NYSDEC EPTOX criteria in the surface soil was Endrin.

The contamination in the fill appears to be localized and nonhomogeneous. It is estimated that there is a low potential for contaminant migration to the Niagara River due to the low mobility of mercury, lead and PCBs detected in the fill. The elevated levels of pesticides in the surface and shallow subsurface soils may pose a threat to human health.

Section 1



1.0 INTRODUCTION

1.1 Project Objective

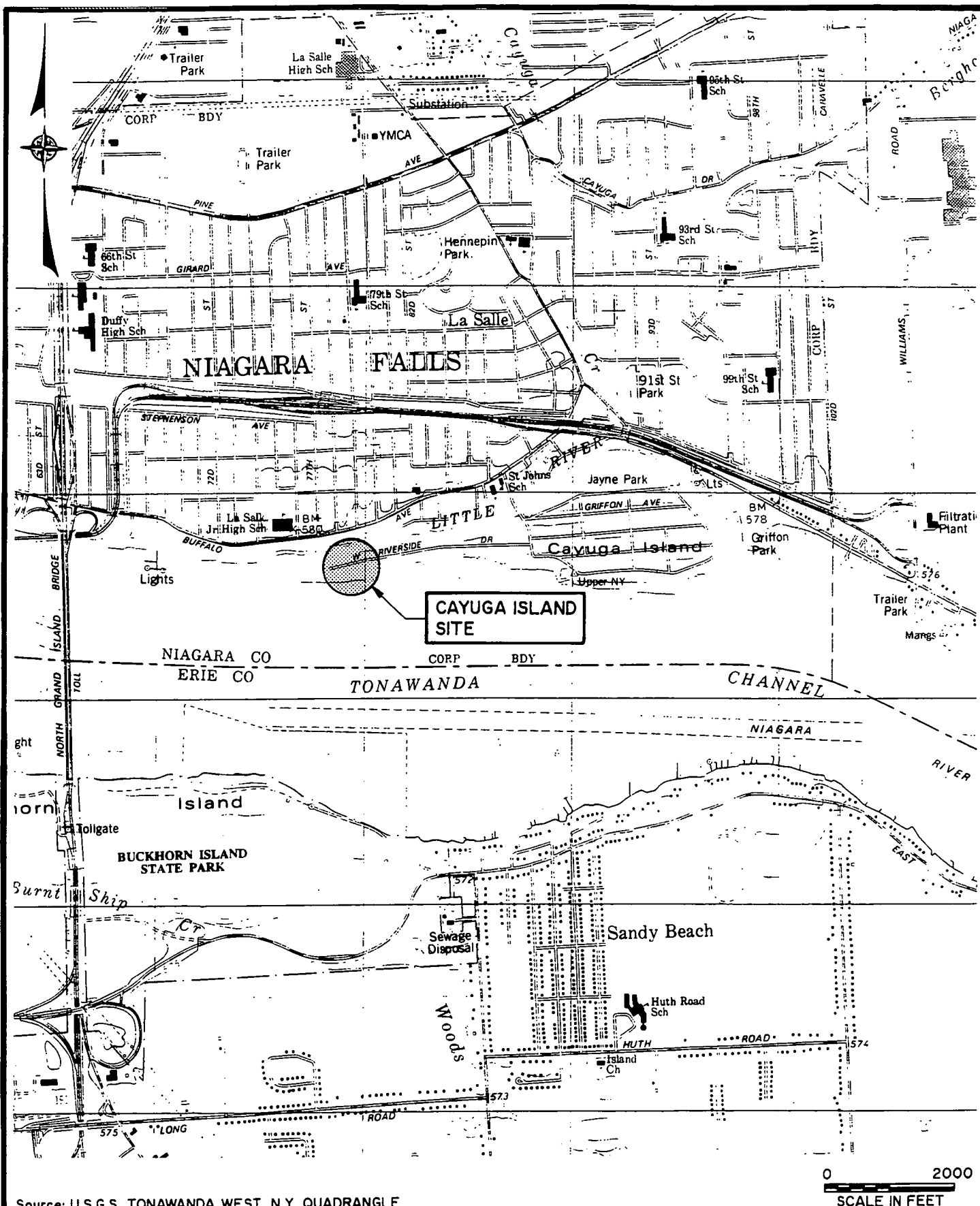
As part of New York State's program to investigate and remediate hazardous waste sites, the New York State Department of Environmental Conservation (NYSDEC) has entered into a contract with the firm of Dvirka and Bartilucci Consulting Engineers of Syosset, New York to undertake a Preliminary Site Assessment (PSA) for the Cayuga Island site, located in Niagara Falls, New York. Based upon the results of the PSA, a Supplemental Investigation was conducted in order to address concerns of subsurface contamination on the western portion of Cayuga Island. The PSA and Supplemental Investigation for this site is being performed with funds allocated under the New York State Superfund program. The purpose of this Supplemental Investigation was to confirm and/or further define the extent of contamination in the western portion of the island.

Cayuga Island is located in the Niagara River, within the City of Niagara Falls, New York (see Figure 1-1). The Niagara River and the Little Niagara River flow past the island toward the west. The areas of investigation for the PSA included the western tip of the island (approximately 10 acres) and the southern shore of the island. The western tip of the island was the focus of this phase of the investigation.

Prior to 1930, the western end of Cayuga Island was extended approximately 250 yards into the Niagara River by depositing clean fill and industrial material (sand, abrasives and broken concrete). It is not known if any hazardous wastes were disposed of at this time. Numerous small areas along the south shore of the island received fill material to extend residential yards and fill in low lying areas. The source(s) of the fill material are unknown. Comparison of 1927 and 1980 Niagara Falls maps indicate that the southern shore has been extended up to 100 feet.

From 1958 to 1962, the western end of the island was widened by placement of clean fill and industrial wastes. The industrial material included sand, abrasives, broken concrete and similar materials. The companies who may have been the source of these materials are Carborundum, Union Carbide, Hooker, Olin and Pittsburgh Metallurgical. No drummed waste or hazardous materials are known to have been disposed of on-site.

This document, entitled "Supplemental Investigation Report for the Cayuga Island Site," provides information on the surface and subsurface soils in the western portion of the island.



CAYUGA ISLAND SITE
 NIAGARA FALLS, NEW YORK

SITE LOCATION MAP

1.2 Previous Field Activities and Findings

The field activities conducted during the Preliminary Site Assessment for the Cayuga Island site included the following:

- o Construction of 18 borings
- o Collection and laboratory analysis of 18 subsurface soil samples
- o Air monitoring

A detailed description of these field activities are presented in the Preliminary Site Assessment Report in Appendix A of this document.

Based on the results of the PSA, fill was encountered on both the western and southern portions of the island. The presence of fill was confirmed through observation of concrete fragments, trace metal fragments, tar paper, brick fragments and asphalt in the samples. Results of the analysis indicated elevated levels of metals, including lead and mercury, and PCBs were detected in samples from the western portion of the island. Polycyclic aromatic hydrocarbons (PAHs) were detected in samples collected on the north side of Rivershore Drive but were determined not to be at levels of concern. A more detailed description of the results of the PSA are presented in the PSA report dated July 1992. Because the extent of the metals and PCB contamination in the western portion had not been fully defined, additional investigation was recommended.

1.3 Supplemental Investigation Field Activities

The Supplemental Investigation included the installation of 12 additional soil borings and the collection and analysis of 12 subsurface and 6 surface soil samples. The following provides a detailed description of these field activities, as well as the analytical results and findings of the investigation.

Section 2



2.0 STUDY AREA INVESTIGATION

2.1 Field Activities/Site Characterization

The field program for the Supplemental Investigation consisted of construction of 12 soil borings and sampling of surface and subsurface soils on the western portion of Cayuga Island.

2.1.1 Borehole Construction

A total of 12 borings were constructed on the western portion of the island. Four borings constructed during the PSA encountered fill and elevated levels of contamination. In an attempt to further define the limits of the contamination at these locations, three additional borings were constructed surrounding each of these four locations (see Figure 2-1). Table 2-1 indicates the Supplemental Investigation boring locations and depths with street addresses. Boring depths ranged from two to six feet and were terminated upon reaching saturated soil. Nine of the borings were constructed utilizing a portable tripod and 2-inch split spoon samplers. Three borings, located on the right of way on West Rivershore Drive, were constructed utilizing hollow stem augers, and samples were collected using a 2-inch or 3-inch split spoon sampler. Three-inch split spoons were utilized to collect samples for chemical analysis and the two-inch split spoons were utilized for geological logging. Split spoon samples were obtained continuously from all borings. One sample was collected from each boring and analyzed for pesticides, polychlorinated biphenyls (PCBs), lead, mercury and EP Toxicity (TOX) extraction. The depth at which the analytical sample was collected was based upon the amount of recovery retrieved in the split spoon and the depth to water.

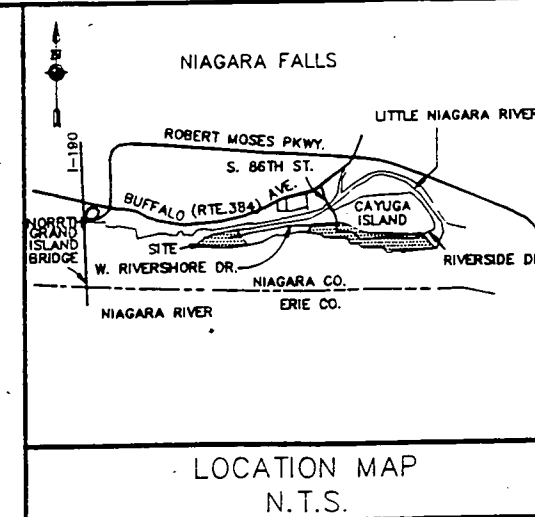
All borings were logged on-site and documented by a geologist in a bound field book and boring log (see Appendix A-1). The Modified Burmeister Classification System was used to describe soil samples recovered from the borings. Additional field documentation is provided in Appendix A.

2.1.2 Surface Soil Sampling

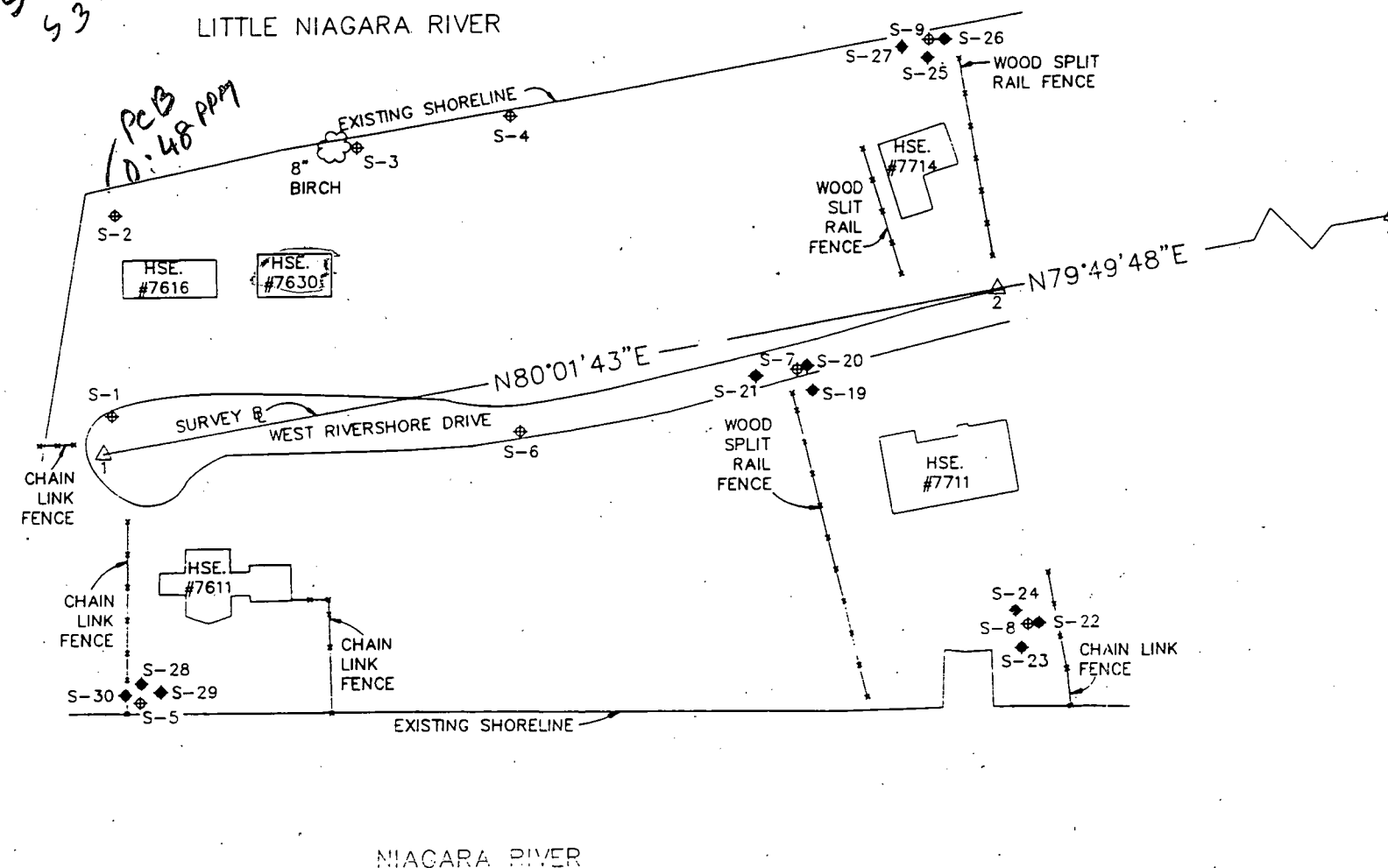
A total of six surface soil samples were collected in the western portion of the Cayuga Island site. Four of the samples were collected in conjunction with the borings constructed during the Supplemental Investigation. These samples were collected from the first split spoon (0-1 feet) during construction of the boring. Two additional surface soil samples were collected at

COORDINATE-LIST

STATION	NORTHING	EASTING	STATION	NORTHING	EASTING	STATION	NORTHING	EASTING
BASELINE-1	4302.45	5036.31	S-7	4349.8	5453.3	S-24	4201.9	5586.1
BASELINE-2	4397.17	5575.09	S-8	4193.7	5593.6	S-25	4538.0	5532.2
S-1	4325.5	5041.4	S-9	4549.1	5532.9	S-26	4549.1	5542.8
S-2	4447.4	5043.6	S-19	4336.9	5462.8	S-27	4544.7	5516.6
S-3	4487.1	5188.2	S-20	4352.0	5459.3	S-28	4163.0	5059.7
S-4	4505.4	5280.0	S-21	4346.1	5428.7	S-29	4157.8	5071.3
S-5	4151.4	5059.2	S-22	4194.4	5599.9	S-30	4156.0	5050.1
S-6	4312.9	5285.8	S-23	4179.5	5589.9			



Tested PAHS
S2 1539 PPM
S3 3.095 PPM
Materden
Chloride
S2 0.008
S3 0.03
Acetone
S2 0.067
S3 0.028



LEGEND

- ◆ SOIL BORING LOCATION
PSA INVESTIGATION
- ◆ SOIL BORING LOCATION
SUPPLEMENTAL INVESTIGATION

REVISED: OCTOBER 1992, ADDED SOIL BORINGS 19 - 30

BORING LOCATION MAP



FIGURE 2 - 1

Prepared for:
Dvirka and Bartilucci, Consult. Engrs.
6800 Jericho Turnpike
Syosset, New York 11791

Prepared by:
OM P. POPU, P.E., P.L.S.
44 Saginaw Drive
Rochester, New York 14623
Tel. No. 716-442-6940

DATE: MAY 1992
SCALE: 1"=100'
SHEET: 1

NOTE: COORDINATES SHOWN HEREON WERE
REFERENCED TO MAGNETIC NORTH AND
AN ASSUMED COORDINATE SYSTEM.

Table 2-1

**CAYUGA ISLAND SITE
SUPPLEMENTAL INVESTIGATION
BORING LOCATIONS**

<u>Boring Number</u>	<u>Depth (feet)</u>	<u>Street Address</u>
S-19	2-4	Right of Way in Front of 7707 West Rivershore Drive
S-20	2-4	Right of Way in Front of 7707 West Rivershore Drive
S-21	2-4	Right of Way in Front of 7707 West Rivershore Drive
S-22	2-4	7711 West Rivershore Drive
S-23	2-4	7711 West Rivershore Drive
S-24	3-4.3	7711 West Rivershore Drive
S-25	4-6	7714 West Rivershore Drive
S-26	0-2	7714 West Rivershore Drive
S-27	0-2	7714 West Rivershore Drive
S-28	2-4	7611 West Rivershore Drive
S-29	2.2-4.2	7611 West Rivershore Drive
S-30	2-4	7605 West Rivershore Drive

other on-site locations in order to obtain sufficient information regarding on-site surface soil quality. These samples were collected using a disposable sterile polystyrene scoop at depths of 0-6 inches. All of the samples were analyzed for Target Compound List (TCL) pesticides/PCBs, lead and mercury, and EP Toxicity (TOX) extraction.

2.1.3 Air Monitoring

As part of this Supplemental Investigation, an air monitoring program was implemented to establish ambient air conditions during borehole construction based on total organic vapor emissions. The air monitoring program utilized a portable photoionization organic vapor detector (PhotoVac MicroTip) to measure total volatile organic vapors.

The primary purpose of the air monitoring program was for the protection of the workers' health and safety and to collect information regarding the presence of organic vapors at the point of sample collection. The detailed monitoring procedures are provided in the work plan for this site.

2.1.4 Surveying and Mapping

A location map was prepared by Om P. Popli, P.E., for use in the preparation of this report. Northern and eastern coordinates were obtained for each boring. All locations are provided on Figure 2-1.

2.2 **Health and Safety Program**

Prior to the Supplemental Investigation, and as part of the PSA Work Plan, a Health and Safety Plan was prepared in order to establish occupational health and safety requirements, responsibilities and procedures to protect workers during the field investigation at the Cayuga Island site. The requirements for worker health and safety were based on the following:

- o The Standard Operating Safety Guides. US Environmental Protection Agency (EPA), Office of Emergency and Remedial Response;
- o The Occupational Health and Safety Administration (OSHA) Regulations, 29 CFR Parts 1910.120 and 1926;
- o Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, NIOSH, OSHA, USCG and EPA;

- o Health and Safety Procedures for Hazardous Waste Sites. Dvirka and Bartilucci Consulting Engineers; and
- o Superfund Amendments and Reauthorization Act (SARA), Title I, Section 126.

All activities associated with the Supplemental Investigation were performed in accordance with this Health and Safety Plan. A detailed description of the Health and Safety Plan is contained in the PSA work plan.

2.3 Quality Assurance/Quality Control and Sampling Program

As part of the Supplemental Investigation and PSA, a Quality Assurance and Quality Control (QA/QC) Plan was prepared which developed and described the detailed sample collection and analytical procedures to be used to ensure valid data collected as part of this project. This QA/QC Plan included detailed descriptions of the following:

- o Objective and Scope
- o Data Usage
- o Monitoring Network Design and Rationale
- o Monitoring Parameters
- o Schedule of Tasks and Outputs
- o Project Organization and Responsibility
- o Data Quality Requirements and Objectives
- o Sampling Procedures
- o Decontamination Procedures
- o Laboratory Sample Custody Procedures
- o Field Management Documentation
- o Calibration Procedures and Preventive Maintenance
- o Documentation, Data Reduction and Reporting
- o Data Validation
- o Performance and System Audits

- o Corrective Action
- o Trip Blanks
- o Field Blanks
- o Matrix Spikes/Matrix Spike Duplicates
- o Method Blanks
- o Field Management Forms
- o NYSDEC Sample Identification, Preparation and Analysis Summary Forms
- o Data Validation Reporting Forms

All work undertaken during the Supplemental Investigation was performed in accordance with the procedures outlined in the QA/QC Plan contained in the PSA Work Plan and as amended in Addendum I for this site.

2.4 Data Validation

Energy and Environmental Engineering, Inc., which is a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) approved laboratory meeting requirements for performing sample analysis according to 1989 Analytical Services Protocols (ASP), was utilized to perform all the chemical analyses for the samples obtained during the Supplemental Investigation. Summary documentation regarding data validation was completed by the laboratory using NYSDEC forms and submitted with the data package as required in the work plan.

Data validation, undertaken by Dvirka and Bartilucci Consulting Engineers and subconsultant, C.C. Johnson and Malhotra, Inc., was performed to determine and document analytical data quality in accordance with NYSDEC ASP requirements. The analytical and validation processes were conducted in conformance with the 1989 ASP and are based on the United States Environmental Protection Agency's (USEPA) Contract Laboratory Protocol "Statement of Work" documents and the associated "CLP Functional Guidelines for Data Validation" documents. The Data Usability Summary is included in Section 3.0.

Throughout the Supplemental Investigation, all aspects of the data validation process were followed in accordance with the procedures outlined in the QA/QC Plan included in the PSA Work Plan and as amended in Addendum I of the PSA Work Plan.

Section 3



3.0 NATURE AND EXTENT OF CONTAMINATION

3.1 Results of Site Characterization

3.1.1 Subsurface Soils

Based upon the results of the Preliminary Site Assessment, additional subsurface investigation in the western portion of the island was determined to be necessary in order to further define the limits of contamination. Three borings, S-7, S-8 and S-9, exceeded the NYSDEC criteria for EPTOX analysis for mercury, and S-9 also exceeded the criteria for lead (see Table 3-1). The samples were subsequently analyzed for EPTOX metals. None of the samples exceed the maximum allowable concentration and were not characterized as hazardous waste. However, in an effort to address the extent of elevated levels of lead and mercury found, three borings were constructed surrounding each of these three borings constructed during the PSA. In addition to these three borings, Boring S-5 indicated elevated levels of PCBs (140 mg/kg). Three additional borings were also installed surrounding this boring as part of the Supplemental Investigation.

One sample from each of the twelve boreholes was collected and analyzed for TCL pesticides/PCBs, lead, mercury and EPTOX extraction. The results from the pesticide/PCB analysis are presented in Table 3-2 and the results of the lead and mercury analysis are presented in Table 3-3.

Continuous split spoon sampling was conducted at each borehole constructed. Detailed geologic descriptions are provided in Appendix A-1. Fill material was encountered in all of the borings constructed in the western portion of the site. The presence of the fill was confirmed through the observation of concrete, brick and asphalt fragments, rubber tubing, white gravel, glass, wood and styrofoam. Boring S-22 contained a white granular spherical material (less than 1 mm in diameter) which was also found in Boring S-8 collected during the PSA and which was analyzed as part of the soil sample for both of these samples. The fill throughout this portion of the island was not found to be uniform as shown by the various types of materials found in each borehole.

Table 3-1

**CAYUGA ISLAND SITE
SUPPLEMENTAL INVESTIGATION
CRITERIA FOR EPTOX ANALYSIS**

Inorganics

<u>EPTOX Analyte</u>	<u>Soil (TWA) Total Concentration (ppm) (15% available)*</u>
Pb	650
Hg	26

Organics

<u>EPTOX Analyte</u>	<u>Soil (TWA) Total Concentration (ppm) (koc derived)</u>
Endrin	2.2(3)
Lindane	12.3(1)
Methoxychlor	2760(2)
Toxaphene	14.8(1)

* EPTOX analysis shall be performed on the borehole or surface soil samples if any of the TCL concentrations exceed the values shown in this column.

- (1) Values derived using Eq1 and Koc values in attachment 4 "USEPA - Superfund Public Health Evaluation Manual" EPA/540/1-86/060; October 1986, Exhibit A-1.
- (2) Value derived from Eq2 and Eq1 using solubility data in "Handbook of Environmental Data on Organic Chemicals," by Karl Verschueren, Van Nostrand Reinhold, NY 1983.
- (3) Value derived from Eq2 and Eq1 using solubility data in USEPA "MAIN" Data Base - Water Engineering Research Lab, Cincinnati, Ohio.

TABLE 3-2
CAYUGA ISLAND
BOREHOLE SOIL SAMPLING
PESTICIDE/PCB ANALYSIS

	CIBHS19	CIBHS20	CIBHS21	CIBHS21 DL	CIBHS22	CIBHS23	CIBHS24	CIBHS25
	10/28/92	10/28/92	10/28/92	10/28/92	10/27/92	10/27/92	10/27/92	10/27/92
DILUTION FACTOR	2	2	100	1000	5	10	10	100
SAMPLE DEPTH	2-4 FEET	2-4 FEET	2-4 FEET	2-4 FEET	2-4 FEET	2-4 FEET	3-4.3 FEET	4-6 FEET
PESTICIDE/PCB COMPOUND	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
Alpha-BHC	17 J	U	12000	14000	8 J	390	45 J	30000
Beta-BHC	80 B	120 B	19000 B	25000 B	U	490	280	47000
Delta-BHC	U	3.7 J	12000	12000	U	U	U	62000
Gamma-BHC(Lindane)	U	U	3500	3800 J	U	150 J	U	3900
Heptachlor	U	U	U	U	U	U	U	U
Aldrin	U	U	U	1400 J	U	U	U	U
Heptachlor Epoxide	U	U	U	U	U	U	32 J	U
Endosulfan I	U	U	U	U	U	U	U	U
Dieldrin	U	U	410 J	U	U	55 J	U	U
4,4'-DDE	57	U	U	U	U	U	U	U
Endrin	U	U	1200 J	4100 J	U	U	U	U
Endosulfan II	U	U	U	U	U	U	U	U
4,4'-DDD	U	U	140 J	U	6.7 J	U	U	U
Endosulfan Sulfate	U	U	U	U	U	U	U	U
4,4'-DDT	U	U	U	U	U	U	U	U
Methoxychlor	U	U	U	U	79 J	U	U	U
Endrin Ketone	19 J	U	U	U	U	U	U	U
Alpha-Chlordane	U	U	U	U	U	U	U	U
Gamma-Chlordane	U	U	U	U	U	U	U	U
Toxaphene	U	U	U	U	U	U	U	U
Aroclor-1016	U	U	U	U	U	U	U	U
Aroclor-1221	U	U	U	U	U	U	U	U
Aroclor-1232	U	U	U	U	U	U	U	U
Aroclor-1242	U	U	U	U	U	U	U	U
Aroclor-1248	U	U	U	U	U	U	U	U
Aroclor-1254	U	U	U	U	U	U	U	U
Aroclor-1260	U	U	U	U	U	U	U	U

QUALIFIERS

B: Compound found in the method blank as well as the sample.

J: Compound found at a concentration below the detection limit.

U: Compound analyzed for but not detected.

TABLE 3-2 (CONTINUED)
CAYUGA ISLAND
BOREHOLE SOIL SAMPLING
PESTICIDE/PCB ANALYSIS

	CIBHS25 DL	CIBHS26	CIBHS26 DL	CIBHS27	CIBHS28	CIBHS29	CIBHS30	CIBHSFB
	10/27/92	10/27/92	10/27/92	10/27/92	10/28/92	10/28/92	10/28/92	10/27/92
DILUTION FACTOR	1000	100	1000	5	2.	1	1	1
SAMPLE DEPTH	4-6 FEET	0-2 FEET	0-2 FEET	0-2 FEET	2-4 FEET	2.2-4.2 FEET	2-4 FEET	N/A
PESTICIDE/PCB COMPOUND	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
Alpha-BHC	26000	1100	960 J	15 J	9.5 J	6.9 J	2.9 J	U
Beta-BHC	51000	120000	180000	260	36 B	36 B	11 B	U
Delta-BHC	60000	7800	6100 J	43 J	U	3.6 J	U	U
Gamma-BHC(Lindane)	3700 J	1000	1400 J	6.2 J	U	U	U	U
Heptachlor	U	U	U	U	U	U	U	U
Aldrin	U	U	U	U	U	U	U	U
Heptachlor Epoxide	U	U	U	U	U	U	U	U
Endosulfan I	U	U	U	U	U	U	U	U
Dieldrin	U	220 J	U	U	U	U	U	U
4,4'-DDE	U	U	U	U	6.1 J	U	1.8 J	U
Endrin	U	U	U	U	4 J	5.6 J	6.7 J	U
Endosulfan II	U	U	U	U	32 J	U	U	U
4,4'-DDD	U	U	U	U	U	U	U	U
Endosulfan Sulfate	U	U	U	U	U	4.5 J	U	U
4,4'-DDT	U	U	U	U	U	U	U	U
Methoxychlor	U	U	U	U	U	U	U	U
Endrin Ketone	U	U	U	U	42	23	U	U
Alpha-Chlordane	U	U	U	U	U	U	U	U
Gamma-Chlordane	U	U	U	U	U	U	U	U
Toxaphene	U	U	U	U	U	U	U	U
Aroclor-1016	U	U	U	U	U	U	U	U
Aroclor-1221	U	U	U	U	U	U	U	U
Aroclor-1232	U	U	U	U	U	U	U	U
Aroclor-1242	U	U	U	U	U	U	U	U
Aroclor-1248	U	U	U	U	U	U	U	U
Aroclor-1254	U	U	U	U	U	U	U	U
Aroclor-1260	U	U	U	U	U	U	U	U

QUALIFIERS

B: Compound found in the method blank as well as the sample.

J: Compound found at a concentration below the detection limit.

U: Compound analyzed for but not detected.

Table 3-3

**CAYUGA ISLAND SITE
SUPPLEMENTAL INVESTIGATION
RESULTS OF LEAD AND MERCURY ANALYSIS
BOREHOLE SOIL SAMPLING**

<u>Sample Number</u>	<u>Concentration of Mercury (mg/kg)</u>	<u>Concentration of Lead (mg/kg)</u>
BHS19	77.0*	144.0
BHS20	0.61	45.3
BHS21	22.7	61.9
BHS22	29.5*	77.4
BHS23	56.8*	34.1
BHS24	57.4*	105.0
BHS25	5.6	67.6
BHS26	4.2	118.0
BHS27	0.23	44.3
BHS28	0.10U	18.6
BHS29	0.39	12.4
BHS30	0.15	41.0
BHSFB	0.2U (ug/l)	1.7U (ug/l)

*Exceeded NYSDEC criteria for EPTOX analysis for mercury of 26.0 ppm.

The results of the analysis conducted as part of this investigation were compared to NYSDEC criteria for EPTOX analysis (see Table 3-1). Based upon this comparison a determination was made whether or not to analyze the sample for EPTOX analysis. In an attempt not to exceed holding times for EPTOX analysis, sample extraction was performed and held for analysis until the results of the analysis could be reviewed.

The results of the lead and mercury analysis indicated that, S-22, S-23 and S-24 all exceeded the NYSDEC criteria for EPTOX analysis for mercury of 26.0 ppm at 29.5, 56.8 and 57.4 mg/kg, respectively. These borings surrounded Boring S-8 which previously exhibited 37.4 mg/kg of mercury.

Previously elevated levels of mercury, greater than the NYSDEC criteria for EPTOX analysis, were found in S-7 at 133 mg/kg. This elevated level was only confirmed by the presence of mercury in S-19 at 77 mg/kg. Due to the elevated level detected in this sample, the sample was analyzed for EPTOX mercury. Results of the analysis indicated the sample did not exceed USEPA maximum concentration of 200 ug/l. Borings S-20 and S-21 also surrounding existing Boring S-7 did not exhibit elevated levels.

The borings surrounding Boring S-9 (S-25, S-26, S-27), did not exhibit the elevated level of lead (774 mg/kg) previously found in this area. Additionally, lead and mercury were not found at elevated levels in S-28, S-29 and S-30, which confirms the results found previously in this area from the analysis of sample S-5.

Results of the pesticide/PCB analysis did not confirm the presence of elevated levels of polychlorinated biphenyls (PCBs) in the area of S 5 as shown by the nondetectable levels for S-28, S-29 and S-30. PCBs were not detected in any of the samples collected during the Supplemental Investigation. Five out of the nine samples collected as part of the PSA exhibited the presence of PCBs. Results of the Supplemental Investigation sampling did not confirm the results of the PSA. This difference may further demonstrate the nonhomogeneity of the fill.

None of the samples exceeded the NYSDEC criteria for EPTOX analysis for pesticides; however, pesticides were detected in all of the samples collected. Elevated levels, greater than 1 mg/kg, of alpha BHC, delta-BHC and gamma-BHC (lindane) were detected in S-21, S-25 and S-26. The results of previous sampling conducted during the PSA also indicated the presence of

pesticides greater than 1 mg/kg in Borings S-1, S-5 and S-8. Figure 3-1 indicates the samples collected during the PSA and Supplemental Investigation exhibited levels of pesticides greater than 1 mg/kg. As shown in Figure 3-1, pesticide contamination is not as localized as the mercury contamination but is found at elevated levels throughout the western portion.

3.1.2 Surface Soils

Due to a concern regarding the elevated levels of contaminants found in the subsurface soils, it was necessary to obtain information regarding the on-site surface soil quality. Six surface soil samples were collected and analyzed for TCL pesticides/PCBs, lead and mercury. Four of the samples were collected in conjunction with four borings constructed. Table 3-4 indicates the surface soil sample number and the related borings.

Results of the analysis are presented in Table 3-5 and Table 3-6. PCBs were not detected in any of the surface soil samples analyzed. Lead and mercury were not found at levels exceeding NYSDEC criteria for EPTOX analysis. Pesticides were detected in all of the samples but exceeded the EPTOX criteria for the Endrin in SS-4. The criteria is 2.2 ppm and SS-4 exhibited a level of 3.2 mg/kg. EPTOX analysis was conducted on SS-4, however, Endrin was not detected.

3.1.3 Air Monitoring

Throughout construction of the borings at the Cayuga Island site, a photo ionization detector was utilized to measure total volatile organic vapors. Only two split spoon samples, collected from Boring S-30 at 0-2 feet and 2-4 feet, indicated readings above background (0.0 ppm) at 1.5 ppm and 2.4 ppm, respectively. These readings were detected directly over the split spoon. Both samples were described as "moist" and this may have affected the reading obtained.

3.2 **Data Validation**

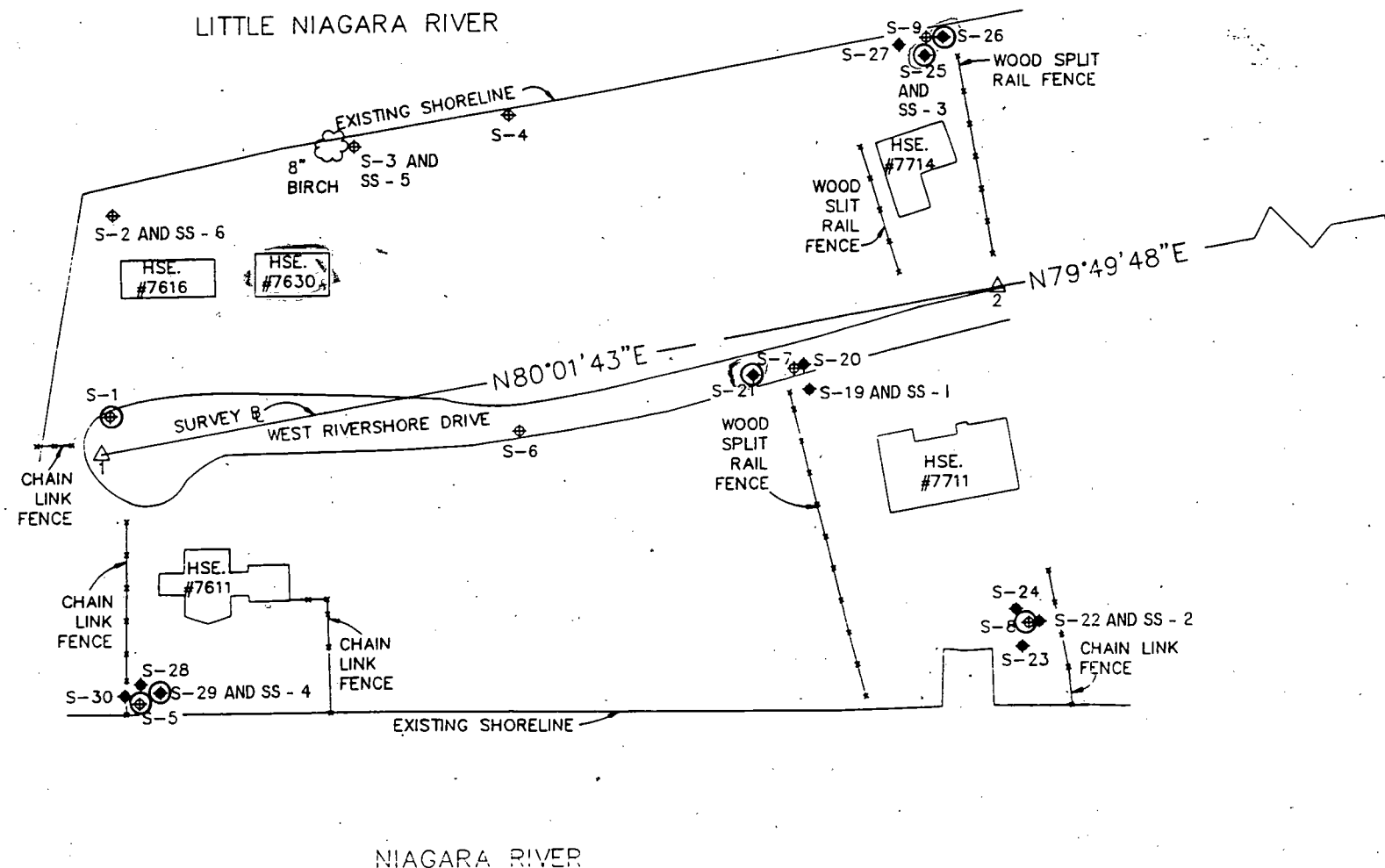
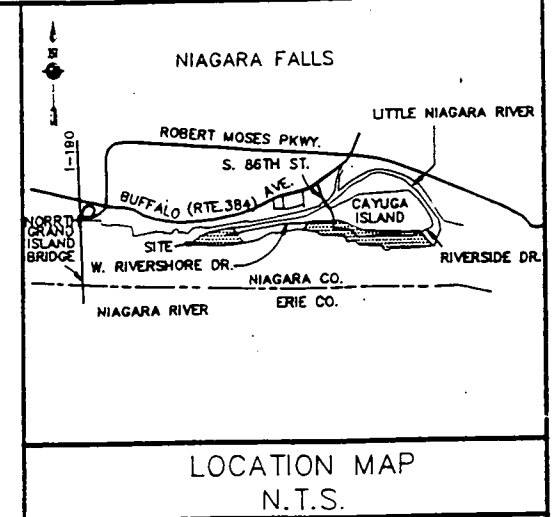
The 18 environmental samples, 12 borehole soil, six surface soil and one field blank, were analyzed for TCL pesticide/PCB parameters and lead and mercury in accordance with the 1989 New York State Department of Environmental Conservation (NYSDEC) Analytical Services Protocol (ASP). The pesticide/PCB data for each of these samples was validated by C.C. Johnson and Malhotra, P.C. (CCJM). The lead and mercury data was validated by D&B's QA/QC officer. The results of the data validation review are presented below.

COORDINATE - LIST

STATION	NORTHING	EASTING
BASELINE-1	4302.45	5036.31
BASELINE-2	4397.17	5575.09
S-1	4325.5	5041.4
S-2	4447.4	5043.6
S-3	4487.1	5188.2
S-4	4505.4	5280.0
S-5	4151.4	5059.2
S-6	4312.9	5285.8

STATION	NORTHING	EASTING
S-7	4349.8	5453.3
S-8	4193.7	5593.6
S-9	4549.1	5532.9
S-19	4336.9	5462.8
S-20	4352.0	5459.3
S-21	4346.1	5428.7
S-22	4194.4	5599.9
S-23	4179.5	5589.9

STATION	NORTHING	EASTING
S-24	4201.9	5586.1
S-25	4538.0	5532.2
S-26	4549.1	5542.8
S-27	4544.7	5516.6
S-28	4163.0	5059.7
S-29	4157.8	5071.3
S-30	4156.0	5050.1



LEGEND

- SOIL BORING LOCATION PSA INVESTIGATION
- SOIL BORING LOCATION SUPPLEMENTAL INVESTIGATION
- SOIL BORING LOCATION WITH ELEVATED LEVELS OF PESTICIDES

REVISED: OCTOBER 1992, ADDED SOIL BORINGS 19 - 30

SURFACE / SUBSURFACE SOIL SAMPLE LOCATIONS WITH ELEVATED LEVELS OF PESTICIDES



FIGURE 3 - 1

Prepared for:
Dvirka and Bartilucci, Consult. Engrs.
6800 Jericho Turnpike
Syosset, New York 11791

Prepared by:
OM P. POPLI, P.E., P.L.S.
44 Saginaw Drive
Rochester, New York 14623
Tel. No. 716-442-6940

DATE: MAY 1992
SCALE: 1" = 100'
SHEET: 1

NOTE : COORDINATES SHOWN HEREON WERE REFERENCED TO MAGNETIC NORTH AND AN ASSUMED COORDINATE SYSTEM.

Table 3-4

CAYUGA ISLAND SITE
SUPPLEMENTAL INVESTIGATION
SURFACE SOIL AND CORRESPONDING BORING LOCATION

<u>Surface Soil Location</u>	<u>Boring Location</u>
CISSS1	S-19
CISSS2	S-22
CISSS3	S-25
CISSS4	S-29
CISSS5	S-3
CISSS6	S-2

TABLE 3-5
CAYUGA ISLAND
SURFACE SOIL SAMPLING
PESTICIDE/PCB ANALYSIS

	CISSS1	CISSS2	CISSS3	CISSS4	CISSS4 DL	CISSS5	CISSS6
	10/28/92	10/27/92	10/27/92	10/28/92	10/28/92	10/27/92	10/27/92
DILUTION FACTOR	1	1	1	100	1000	1	1
SAMPLE DEPTH	0-6 INCHES	0-6 INCHES	0-6 INCHES	0-6 INCHES	0-6 INCHES	0-6 INCHES	0-6 INCHES
PESTICIDE/PCB COMPOUND	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
Alpha-BHC	13	8.4 J	U	190 J	U	U	1.2 J
Beta-BHC	22 B	37	U	16000 B	16000 B	5 J	18
Delta-BHC	U	U	8.1 J	U	U	U	U
Gamma-BHC(Lindane)	U	6.5 J	U	U	U	U	U
Heptachlor	U	U	U	U	U	U	U
Aldrin	U	U	U	U	2000 J	U	U
Heptachlor Epoxide	U	0.73 J	U	U	U	6.7 J	1.3 J
Endosulfan I	U	U	U	U	U	U	U
Dieldrin	U	7.2 J	U	70 J	U	U	U
4,4'-DDE	35	U	2.1 J	U	U	7.3 J	15 J
Endrin	U	U	U	U	3200 J	U	U
Endosulfan II	U	U	U	U	U	U	U
4,4'-DDD	24	7.9 J	U	U	U	U	U
Endosulfan Sulfate	U	U	U	U	U	U	U
4,4'-DDT	19	U	U	U	U	U	U
Methoxychlor	U	U	U	U	U	U	U
Endrin Ketone	9.8 J	U	U	U	U	U	U
Alpha-Chlordane	U	U	U	U	U	U	U
Gamma-Chlordane	U	U	U	U	U	U	U
Toxaphene	U	U	U	U	U	U	U
Aroclor-1016	U	U	U	U	U	U	U
Aroclor-1221	U	U	U	U	U	U	U
Aroclor-1232	U	U	U	U	U	U	U
Aroclor-1242	U	U	U	U	U	U	U
Aroclor-1248	U	U	U	U	U	U	U
Aroclor-1254	U	U	U	U	U	U	U
Aroclor-1260	U	U	U	U	U	U	U

QUALIFIERS

B: Compound found in the method blank as well as the sample.

J: Compound found at a concentration below the detection limit.

U: Compound analyzed for but not detected.

Table 3-6

CAYUGA ISLAND SITE
SUPPLEMENTAL INVESTIGATION
RESULTS OF LEAD AND MERCURY ANALYSIS
SURFACE SOIL SAMPLING

<u>Sample Number</u>	<u>Concentration of Mercury (mg/kg)</u>	<u>Concentration of Lead (mg/kg)</u>
SSS1	3.4	53.2
SSS2	0.31	42.7
SSS3	0.28	27.9
SSS4	2.9	136.0
SSS5	0.77	37.9
SSS6	0.51	40.2

The results of the initial analysis, reanalysis and/or diluted analysis were reviewed to determine which sample analyses were most contractually compliant in order to determine which data set should be used for the preliminary site assessment. The results of the data validation review is presented in Table 3-7.

Samples were analyzed for lead by utilizing both the furnace and ICP methods depending on the concentration of lead present. Samples BHS19, BHS24, BHS26 and SSS4 were analyzed for lead by ICP with all results being qualified as estimated, biased high due to spiking recoveries. The rest of the samples were analyzed for lead using the furnace method with results being qualified as estimated, biased low due to low spiking recoveries.

All samples were analyzed for pesticide/PCBs using the NYSDEC 89 ASP Method 89.3. Samples BHS21(2), BHS25(4), BHS26(0) and SSS4 required reanalysis at higher dilutions due to the high levels of pesticides detected and the possibility of interferences masking targeted compounds. Based upon review of both the initial and secondary dilution analysis (suffix-DL) of the above samples, the data should be utilized as follows. Results for dieldrin and 4,4'-DDD for sample BHS21(2) should be taken from the initial run with the remaining results taken from the diluted run BHS21(2)DL. For sample BHS25(4), all results should be taken from the diluted run BHS25(4)DL. For sample BHS26(0), all results should be taken from the initial analysis with the exception of beta-BHC which should be taken from BHS26(0)DL. All the results from the initial run of SSS4 should be used along with the results for aldrin and endrin in the diluted run SSS4DL.

The following samples were analyzed on the primary column (quantitation column) 1 day outside of the 40-day from Validated Time of Sample Receipt (VTSR) holding time, BHS25(4)DL, BHS26(0), BHS26(0)DL and BHS27(0). However, the analysis was performed within 40 days from sample extraction. Results for the above samples have been qualified as estimated due to holding times but are deemed usable for environmental assessment. Confirmation analysis for a few samples was done outside the 40-day from VTSR holding time but within 40 days from sample extraction and does not affect the quality of the data obtained.

Sample results have also been qualified as estimated based upon calibration criteria exceeding 15 percent difference between initial and continuing calibrations. This does not affect the usability and/or validity of the data.

The validation reports prepared by CCJM and D&B's QA/QC officer are included in Appendix B.

Table 3-7

DATA VALIDATION SUMMARY

<u>Sample ID</u>	<u>Matrix</u>	<u>PCB</u>	<u>Lead</u>	<u>Mercury</u>
BHS19	Soil	OK ³	OK ¹	OK
BHS20	Soil	OK ³	OK ²	OK
BHS21	Soil	OK ^{3,7}	OK ²	OK
BHS22	Soil	OK ⁵	OK ²	OK
BHS23	Soil	OK	OK ²	OK
BHS24	Soil	OK ^{6,7}	OK ¹	OK
BHS25	Soil	OK ^{3,4,5}	OK ²	OK
BHS26	Soil	OK ^{4,5,7}	OK ¹	OK
BHS27	Soil	OK ^{4,5}	OK ²	OK
BHS28	Soil	OK ³	OK ²	OK
BHS29	Soil	OK ³	OK ²	OK
BHS30	Soil	OK ³	OK ²	OK
BHSFB	Water	OK	OK ²	OK
SSS1	Soil	OK ³	OK ²	OK
SSS2	Soil	OK ^{3,5}	OK ²	OK
SSS3	Soil	OK ^{3,5}	OK ²	OK
SSS4	Soil	OK ^{3,7}	OK ¹	OK
SSS5	Soil	OK ^{3,5}	OK ²	OK
SSS6	Soil	OK ^{3,5}	OK ²	OK

Notes:

- 1 Lead was analyzed for by ICP. The spiking recovery was 229%, therefore, result is deemed estimated high.
- 2 Lead was analyzed for by furnace. The spiking recovery was 12.5%, therefore, result is deemed estimated low.

Table 3-7 (continued)

DATA VALIDATION SUMMARY

Notes (continued):

- 3 Continuing calibration %D criteria was exceeded. Results have been qualified as estimated.
- 4 Sample was analyzed on the primary column 1 day outside of the 40-day from VTSR holding time but within 40 days from extraction. All data is qualified as estimated and is deemed usable for environmental assessment.
- 5 Sample was analyzed on the confirmation column within 40 days from sample extraction but outside 40-day from VTSR holding time. Qualification of data was not required.
- 6 Results qualified as estimated due to surrogate recoveries exceeding advisory limits. Data is deemed usable.
- 7 Sample analyzed at a secondary dilution due to high concentrations of pesticides and possible interferences.

Section 4



4.0 CONCLUSIONS AND RECOMMENDATIONS

Based upon the results obtained during the PSA, low levels of contaminants were found in the southern portion of Cayuga Island and elevated levels of lead, mercury, pesticides and PCBs were detected in the western area. The results of the Supplemental Investigation further defined the extent of this subsurface contamination on the western portion of the island. The results of the PSA and Supplemental Investigation indicate that the fill on the western portion of the island is nonhomogeneous and contains elevated levels of lead, mercury and pesticides in some areas. Areas of elevated levels of mercury include the subsurface soils at 7711 West Rivershore Drive and West Rivershore Drive in front of 7707. The presence of an elevated level of PCBs in Boring S-8 detected during the PSA were not confirmed during the Supplemental Investigation. The concerns regarding the elevated PCB concentrations in the western portion of the island appear to be limited to isolated locations within the fill. Elevated levels of pesticides were found in the subsurface soils in front of 7707 West Rivershore Drive as well as in front of 7714 West Rivershore Drive.

Surface soil samples collected to determine if the contamination found in the subsurface is also present in the surface, did not indicate the presence of elevated levels of mercury, lead or PCBs. However, slightly elevated levels of pesticides, including Endrin, were detected in SS-4 on 7611 West Rivershore Drive.

Due to the low mobility of the contaminants found, including pesticides, PCBs, lead and mercury, there is a low potential for contaminant migration to the Niagara River or the environment. However, due to the elevated levels of pesticides detected in the surface and shallow subsurface soils of the western portion of the island, risk to human health may be a concern.



APPENDIX A

FIELD DOCUMENTATION

APPENDIX A-1

BORING LOGS

[illegible]

[illegible]

BORING NO. 5-22
Sheet 1 of 1
Location Janik Backyard
2211 W. Rivershore

[illegible]

DRILLING CONTRACTOR Driller <u>Buffalo Drilling</u> Inspector <u>G. Gould - DGB</u> Rig Type <u>Tripos</u> Drilling Method <u>Split spoons</u>				DVIRKA & BARTILUCCI PROJECT NAME <u>Cayuga Island</u> PROJECT # <u>1148 2C</u>		BORING NO. <u>S-23</u> Sheet <u>1</u> of <u>1</u> Location <u>backyard of Janik residence</u> <u>7711 W. Riverside</u>					
GROUND WATER OBSERVATIONS Water level <table border="1" style="display: inline-table; width: 100px; height: 20px;"><tr><td> </td></tr></table> Time <table border="1" style="display: inline-table; width: 100px; height: 20px;"><tr><td> </td></tr></table> Date <table border="1" style="display: inline-table; width: 100px; height: 20px;"><tr><td> </td></tr></table> Casing depth <table border="1" style="display: inline-table; width: 100px; height: 20px;"><tr><td> </td></tr></table>								Weather <u>partly sunny, Wind 0-5 from W.</u> Date/Time Start <u>10/27/92 13:59</u> Date/Time Finish <u>10/27/92 14:20</u>		Plot Plan <u>S-22</u> <u>S-24</u> <u>S-8</u> <u>S-28</u> <u>Niagara R.</u> ↑ N	
Sample Depths	Samp. No.	SPT	~~LOG~~ ^{PID} Reading	FIELD IDENTIFICATION OF MATERIAL	~~WELL SCHEMATIC~~ Samples	COMMENTS					
0-2'	SS-1	9		G moist brown silt (faint dk brown mottling) to roots		background PID: 0.0 MPa					
Rec=	2.0	11									
3" spoon		13									
		17									
2-4'	SS-2	55		moist dk gray - black f. m. sand (fill)		CJ-BH-S-23 14:16 2-4'					
Rec=	2.0	103		moist, wood, card board glass							
3" spoon		72		black silt w/ gravel (fill)							
		58		wet gray - black silt w/ gravel							
4-6'	SS-3	16		to brick fragments (fill)		CJ-BH-S-1F3 wash blank on 3" spoon 14:25					
Rec=	0.8	8									
2" spoon		20									
		30									
6-8'	SS-4					bottom of boring 6.0'					
Rec=											
				Soil Stratigraphy Summary _____							
SPT= STANDARD PENETRATION TEST											

[illegible]

DRILLING CONTRACTOR Driller <u>Buffalo Drilling - Mike</u> Inspector <u>G. Gould - D&B</u> Rig Type <u>Tripod</u> Drilling Method <u>3" spoons</u>		DVIRKA & BARTILUCCI PROJECT NAME <u>Cayuga Island</u> PROJECT # <u>1148 2C</u>	BORING NO. <u>S-25</u> Sheet <u>1</u> of <u>1</u> Location <u>Kasper backyard</u> <u>7714 W. Rivershore</u>
---	--	---	--

GROUND WATER OBSERVATIONS Water level <table border="1" style="width:100%; height: 20px;"><tr><td> </td><td> </td><td> </td></tr></table> Time <table border="1" style="width:100%; height: 20px;"><tr><td> </td><td> </td><td> </td></tr></table> Date <table border="1" style="width:100%; height: 20px;"><tr><td> </td><td> </td><td> </td></tr></table> Casing depth <table border="1" style="width:100%; height: 20px;"><tr><td> </td><td> </td><td> </td></tr></table>													Weather <u>overcast light w breeze 45-55</u> Date/Time Start <u>10/21/92 9:30</u> Date/Time Finish <u>10/27/92 10:30</u>	Plot Plan 7N <u>Canal</u> S-17 S-5 S-26 S-25

Sample Depths	Samp. No.	SPT	P.P.S. Reading	FIELD IDENTIFICATION OF MATERIAL	WELL SCHEMATIC Sample information	COMMENTS
0-2	SS-1	4	0.0 ppm	moist brown silt, to clay w roots black f. gravel 4" thick (fill)	CI-SS-S-3 9.52 0-2'	background P.P.S. = 0.0 ppm (micro tip)
Rec: 2.0	9					
3" spoon	17					
	20					
2-4	SS-2	16	0.0 ppm	moist gray-brown silt to clay 6" layer of f.c sand - black brown & yellow, to glass, to wood gray clay with black mottling (fill)	CI-BH-S-25 10.23 4-6'	
Rec: 2.0	24					
3" spoon	26					
	30					
4-6	SS-3	6	0.0 ppm	wet gray to black mottled clay 4" zone of gray to black mottled f.m sand (fill)		
Rec: 2.0	5					
2" spoon	5					
	4					
6-8	SS-4			Bottom of boring 6.0'		
Rec: 1.7						

Soil Stratigraphy Summary _____

SPT= STANDARD PENETRATION TEST _____

[illegible]

[illegible]

[illegible]

APPENDIX A-2

DAILY FIELD ACTIVITY REPORTS



DVIRKA
AND
BARTILUCCI

DAILY FIELD ACTIVITY REPORT

Report Number: 1 Project Number: 1148 Date: 10/26/92

Field Log Book Page Number: 25 24, 25

Project: Cayuga Island

Address: Cayuga Island, Niagara Falls NY

Weather: (AM) Cool, overcast Rainfall: (AM) — Inches
(PM) Cool, overcast (PM) — Inches

Temperature: (AM) 43 °F Wind Speed: (AM) 3-5 MPH Wind Direction: (AM) W
(PM) — °F (PM) — MPH (PM) W

Site Condition: Clear

Personnel On Site:	Name	Affiliation	Arrival Time	Departure Time
	<u>M. Dioguardi</u>	<u>DfB</u>	<u>1:00</u>	<u>3:00</u>
	<u>G. Gould</u>	<u>DfB</u>	<u>"</u>	<u>"</u>
	<u>Pam</u>	<u>Om P. Poply</u>	<u>2:00</u>	<u>4:00</u>
	<u>Kevin</u>	<u>"</u>	<u>"</u>	<u>"</u>
	<u>Arvind</u>	<u>"</u>	<u>"</u>	<u>"</u>

Subcontractor Work Commencement: (AM) — (PM) 2:00

Subcontractor Work Completion: (AM) — (PM) 4:00



DVIRKA
AND
BARTILUCCI

DATE: 10/26/92

DAILY FIELD ACTIVITY REPORT

General work performed today by D&B: Travelled to site, observed decontamination of drill rig by Buffalo Drilling at Love Canal facility; Met with Mr. P. Popli at site showed them the locations of the borings and labelled bottles and completed paperwork.

List specific inspection(s) performed and results (include problems and corrective actions):

N/A

List type and location of tests performed and results (include equipment used and monitoring results):

N/A

Verbal comments received from subcontractor (include construction and testing problems, and recommendations/resulting action):

Surveyors will find old boring locations by 8:00 am tomorrow
Drillers will meet us at site between 8:15 and 8:30 tomorrow

Prepared by:

Maria Dioguardi

Reviewed by: _____



DVIRKA
AND
BARTILUCCI

DATE: 10/26/92

DAILY FIELD ACTIVITY REPORT

Work performed today by subcontractor(s) (includes equipment and labor breakdown):

Buffalo Drilling Steam cleaned rig & spoons
at Love Canal Facility - 2 hrs

Surveyors looked over site and prepared to shoot
in old borings

John G. G. G.



DVIRKA
AND
BARTILUCCI

DAILY FIELD ACTIVITY REPORT

Report Number: 2 Project Number: 1148 Date: 10/27/92

Field Log Book Page Number: 26-27

Project: Cayuga Island

Address: W. Rivershore Dr, Niagara Falls, NY

Weather: (AM) overcast Rainfall: (AM) 0 Inches
(PM) partly sunny (PM) 0 Inches

Temperature: (AM) 45 °F Wind Speed: (AM) 0-5 MPH Wind Direction: (AM) W
(PM) 50 °F (PM) 0-5 MPH (PM) W

Site Condition: clear

Personnel On Site:	Name	Affiliation	Arrival Time	Departure Time
	G. Gould	D+B	7:45	15:40
	M. Diaguardi	D+B	7:45	15:40
	Steve Perrigo	DEC - Albany	7:45	15:40
	Mike Sacli	Buffalo Drilling	8:35	15:40
	Don Rimbeck	..	8:35	15:40
	John Barron	..	16:05	15:40

Subcontractor Work Commencement: (AM) 8:35 (PM) ~~11:50~~ 12:50

Subcontractor Work Completion: (AM) 12:20 pm (PM) 15:40



DVIRKA
AND
BARTILUCCI

DATE: 10/27/92 Tuesday

DAILY FIELD ACTIVITY REPORT

General work performed today by D&B: _____

Oversite of drilling

Collection of samples

Packaging & Shipping of samples

List specific inspection(s) performed and results (include problems and corrective actions):

see drilling logs

List type and location of tests performed and results (include equipment used and monitoring results):

see drilling logs

Verbal comments received from subcontractor (include construction and testing problems, and recommendations/resulting action):

We will start between 7:30 & 8:00 tomorrow
on Dilora Property so Mr. Dilora can watch work.

Prepared by: _____

gandgell

Reviewed by: _____



DVIRKA
AND
BARTILUCCI

DATE: 10/27/92 Tuesday

DAILY FIELD ACTIVITY REPORT

Work performed today by subcontractor(s) (includes equipment and labor breakdown):

Set up, sampling with split spoons, decontamination
of split spoons, site mobilization at the following
locations

Boring	3' spoons	2" spoons	Total depth
S-25	2	1	6.0'
S-26	2	1	6.0'
S-27	2	1	6.0'
S-22	2	1	6.0'
S-23	2	1	6.0'
S-24	2	gg	4.3'
Totals	12	5	34.3

All borings with tripod rig.

Janell
Gee



DVIRKA
AND
BARTILUCCI

DAILY FIELD ACTIVITY REPORT

Report Number: 3 Project Number: 1148 Date: 10/28/92 Weds

Field Log Book Page Number: 28-30

Project: Cayuga Island

Address: West Rivershore Drive, Niagara Falls, NY

Weather: (AM) Overcast Rainfall: (AM) 0 Inches
(PM) Partly Sunny (PM) 0 Inches

Temperature: (AM) 38 °F Wind Speed: (AM) 0 MPH Wind Direction: (AM) —
(PM) 55 °F (PM) 0-3 MPH (PM) 5

Site Condition: clear

Personnel On Site:	Name	Affiliation	Arrival Time	Departure Time
	<u>G. Gould</u>	<u>D+B</u>	<u>7:20</u>	<u>13:05</u>
	<u>Steve Perrigo</u>	<u>DEC - Albany</u>	<u>7:35</u>	<u>11:15</u>
	<u>Mike Sacli</u>	<u>Buffalo Drilling</u>	<u>7:55</u>	<u>13:05</u>
	<u>Don Rimbeck</u>	<u>" "</u>	<u>7:55</u>	<u>13:05</u>
	<u>John Barron</u>	<u>" "</u>	<u>7:55</u>	<u>12:00</u>
	<u>Kevin</u>	<u>Om Papi: Surveying</u>	<u>8:45</u>	<u>9:00</u>
	<u>Pam</u>	<u>" "</u>	<u>8:45</u>	<u>9:00</u>
	<u>Arvind</u>	<u>" "</u>	<u>8:45</u>	<u>9:00</u>

Subcontractor Work Commencement: (AM) 7:55 (PM) X

Subcontractor Work Completion: (AM) 13:05 (PM) X



DVIRKA
AND
BARTILUCCI

DATE: 10/28/92 Wednesday

DAILY FIELD ACTIVITY REPORT

General work performed today by D&B: _____

observe borings

collect samples

package & ship samples

List specific inspection(s) performed and results (include problems and corrective actions):

see drilling logs

List type and location of tests performed and results (include equipment used and monitoring results):

see drilling logs

Verbal comments received from subcontractor (include construction and testing problems, and recommendations/resulting action):

Surveyors will locate new borings ~~on~~ Thursday
morning

Reviewed & signed drillers daily work sheets
We agreed on all quantities

Prepared by: _____

gentle

Reviewed by: _____



DVIRKA
AND
BARTILUCCI

DATE: 10/28/92 Wednesday

DAILY FIELD ACTIVITY REPORT

Work performed today by subcontractor(s) (includes equipment and labor breakdown):

Set up, split spoon sampling, decontamination of spoons, site mobilization & site restoration at the following locations:

Boring	Method	3" spoons	2" spoons	Depth
S-28	Tripod	2	1	6.0'
S-29	Tripod	2	1	6.0'
S-30	Tripod	2	1	6.0'
S-19	Truck Rig	2	1	6.0'
S-20	Truck Rig	2	1	6.0'
S-21	Truck Rig	2	1	6.0'
		12	6	30.0'

Garth

APPENDIX A-3

SAMPLE INFORMATION RECORDS



DVIRKA
AND
BARTILUCCI

SAMPLE INFORMATION RECORD

SITE Cayuga Island SAMPLE CREW G. Gould

SAMPLE LOCATION/WELLNO. CI-SS-S-6

FIELD SAMPLE I.D. NUMBER SS-6 adjacent to S-2 DATE 10/27/92

TIME 9:45A WEATHER Partly Cloudy TEMPERATURE 50°F

SAMPLE TYPE:

GROUNDWATER _____ SEDIMENT _____

SURFACE WATER/STREAM _____ AIR _____

SOIL ✓ OTHER (Describe, i.e., septage, leachate) _____

WELL INFORMATION (fill out for groundwater samples):

DEPTH TO WATER _____ MEASUREMENT METHOD _____

DEPTH OF WELL _____ MEASUREMENT METHOD _____

VOLUME REMOVED _____ REMOVAL METHOD _____

FIELD TEST RESULTS:

COLOR _____ pH _____ ODOR _____

TEMPERATURE (°F) _____ SPECIFIC CONDUCTANCE (umhos/cm) _____

OTHER (OVA, Methane meter, etc.) 0.0 ppm

CONSTITUENTS SAMPLED: P/PCBs Lead, Mercury EPTOX Extraction

REMARKS: collected adjacent to old BH-2 location

GAL/FT 1-1/4" = 0.077
1-1/2" = 0.10

WELL CASING VOLUMES

2" = 0.16
2-1/2" = 0.24
3" = 0.37
3-1/2" = 0.50

4" = 0.65
6" = 1.46



DVIRKA
AND
BARTILUCCI

SAMPLE INFORMATION RECORD

SITE Cayuga Island SAMPLE CREW G. Gould
SAMPLE LOCATION/WELL NO. CI-SS-S-5
FIELD SAMPLE I.D. NUMBER SS-5 adjacent to S-3 DATE 10/27/92
TIME 8:18 A WEATHER Partly Cloudy TEMPERATURE 45°F

SAMPLE TYPE:

GROUNDWATER _____ SEDIMENT _____
SURFACE WATER/STREAM _____ AIR _____
SOIL ✓ OTHER (Describe, i.e., septage, leachate) _____

WELL INFORMATION (fill out for groundwater samples):

DEPTH TO WATER _____ MEASUREMENT METHOD _____
DEPTH OF WELL _____ MEASUREMENT METHOD _____
VOLUME REMOVED _____ REMOVAL METHOD _____

FIELD TEST RESULTS:

COLOR _____ pH _____ ODOR _____
TEMPERATURE (°F) _____ SPECIFIC CONDUCTANCE (umhos/cm) _____
OTHER (OVA, Methane meter, etc.) 0.0 ppm

CONSTITUENTS SAMPLED:

P/PCBS Lead, Mercury EPTox Extraction

REMARKS: Sample collected adjacent to old BH-3 location
Not BH-4 as indicated in Work Plan

GAL/FT	WELL CASING VOLUMES			
	1-1/4" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1-1/2" = 0.10	2-1/2" = 0.24	3-1/2" = 0.50	6" = 1.46



DVIRKA
AND
BARTILUCCI

SAMPLE INFORMATION RECORD

SITE Cayuga Island SAMPLE CREW G. Gould
SAMPLE LOCATION/WELL NO. CI-SS-S-1
FIELD SAMPLE I.D. NUMBER SS-19 DATE 10/28/92
TIME 11:24 WEATHER Partly Sunny TEMPERATURE 55°F

SAMPLE TYPE:

GROUNDWATER _____ SEDIMENT _____
SURFACE WATER/STREAM _____ AIR _____
SOIL ✓ OTHER (Describe, i.e., septage, leachate) _____

WELL INFORMATION (fill out for groundwater samples):

DEPTH TO WATER _____ MEASUREMENT METHOD _____
DEPTH OF WELL _____ MEASUREMENT METHOD _____
VOLUME REMOVED _____ REMOVAL METHOD _____

FIELD TEST RESULTS:

COLOR _____ pH _____ ODOR _____
TEMPERATURE (°F) _____ SPECIFIC CONDUCTANCE (umhos/cm) _____
OTHER (OVA, Methane meter, etc.) 0.0 ppm

CONSTITUENTS SAMPLED:

P/PcB Pb/Hg ETox

REMARKS:

0'-2' below ground surface
This boring location was changed to South edge of road
due to conflict with utilities in paved road.

GAL/FT	WELL CASING VOLUMES			
	1-1/4" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1-1/2" = 0.10	2-1/2" = 0.24	3-1/2" = 0.50	6" = 1.46



DVIRKA
AND
BARTILUCCI

SAMPLE INFORMATION RECORD

SITE Cayuga Island SAMPLE CREW G. Gould
SAMPLE LOCATION/WELL NO. CI-BH-S-19
FIELD SAMPLE I.D. NUMBER 5-19 DATE 10/28/92
TIME 11:39 WEATHER partly sunny TEMPERATURE 55° F

SAMPLE TYPE:

GROUNDWATER _____ SEDIMENT _____
SURFACE WATER/STREAM _____ AIR _____
SOIL ✓ OTHER (Describe, i.e., septage, leachate) _____

WELL INFORMATION (fill out for groundwater samples):

DEPTH TO WATER _____ MEASUREMENT METHOD _____
DEPTH OF WELL _____ MEASUREMENT METHOD _____
VOLUME REMOVED _____ REMOVAL METHOD _____

FIELD TEST RESULTS:

COLOR _____ pH _____ ODOR _____
TEMPERATURE (°F) _____ SPECIFIC CONDUCTANCE (umhos/cm) _____
OTHER (OVA, Methane meter, etc.) 0.0 ppm

CONSTITUENTS SAMPLED:

P/PCB's Pb, Hg EPTOX

REMARKS:

Sampled 2'-4' below ground surface. Location of this boring & sample was changed from work plan due to conflict with utilities in paved road.

GAL/FT	WELL CASING VOLUMES			
	1-1/4" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1-1/2" = 0.10	2-1/2" = 0.24	3-1/2" = 0.50	6" = 1.46



DVIRKA
AND
BARTILUCCI

SAMPLE INFORMATION RECORD

SITE Cayuga Island SAMPLE CREW G. Gould
SAMPLE LOCATION/WELLNO. CI-BH-5-20
FIELD SAMPLE I.D. NUMBER 5-20 DATE 10/28/92
TIME 12:02 WEATHER Overcast 50°F TEMPERATURE 50°F

SAMPLE TYPE:

GROUNDWATER _____ SEDIMENT _____
SURFACE WATER/STREAM _____ AIR _____
SOIL ✓ OTHER (Describe, i.e., septage,
leachate) _____

WELL INFORMATION (fill out for groundwater samples):

DEPTH TO WATER _____ MEASUREMENT METHOD _____
DEPTH OF WELL _____ MEASUREMENT METHOD _____
VOLUME REMOVED _____ REMOVAL METHOD _____

FIELD TEST RESULTS:

COLOR _____ pH _____ ODOR _____
TEMPERATURE (°F) _____ SPECIFIC CONDUCTANCE (umhos/cm) _____
OTHER (OVA, Methane meter, etc.) 0.0 ppm

CONSTITUENTS SAMPLED:

P/PCB's Pb, Hg EPTOX

REMARKS:

sampled 2'-4' below ground surface

GAL/FT 1-1/4" = 0.077
1-1/2" = 0.10

WELL CASING VOLUMES

2" = 0.16
2-1/2" = 0.24
3" = 0.37
3-1/2" = 0.50

4" = 0.65
6" = 1.46



DVIRKA
AND
BARTILUCCI

SAMPLE INFORMATION RECORD

SITE Cayoga Island SAMPLE CREW G. Gould
SAMPLE LOCATION/WELL NO. CI-BH-S-21
FIELD SAMPLE I.D. NUMBER S-21 DATE 10/28/92
TIME 11:24 WEATHER partly sunny TEMPERATURE 55° F

SAMPLE TYPE:

GROUNDWATER _____ SEDIMENT _____
SURFACE WATER/STREAM _____ AIR _____
SOIL ✓ OTHER (Describe, i.e., septage, leachate) _____

WELL INFORMATION (fill out for groundwater samples):

DEPTH TO WATER _____ MEASUREMENT METHOD _____
DEPTH OF WELL _____ MEASUREMENT METHOD _____
VOLUME REMOVED _____ REMOVAL METHOD _____

FIELD TEST RESULTS:

COLOR _____ pH _____ ODOR _____
TEMPERATURE (°F) _____ SPECIFIC CONDUCTANCE (umhos/cm) _____
OTHER (OVA, Methane meter, etc.) _____

CONSTITUENTS SAMPLED:

P/Pb's Pb, Hg EPTOX

REMARKS:

Sampled 2'-4' below ground surface

GAL/FT	WELL CASING VOLUMES			
	1-1/4" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1-1/2" = 0.10	2-1/2" = 0.24	3-1/2" = 0.50	6" = 1.46



DVIRKA
AND
BARTILUCCI

SAMPLE INFORMATION RECORD

SITE Cayuga Island SAMPLE CREW G. Gould
SAMPLE LOCATION/WELLNO. CI-^{SS}-S-2
FIELD SAMPLE I.D. NUMBER ~~852~~ 5-22 DATE 10/27/92
TIME 13:28 WEATHER Partly Cloudy TEMPERATURE 50°F

SAMPLE TYPE:

GROUNDWATER _____ SEDIMENT _____
SURFACE WATER/STREAM _____ AIR _____
SOIL ✓ OTHER (Describe, i.e., septage, leachate) _____

WELL INFORMATION (fill out for groundwater samples):

DEPTH TO WATER _____ MEASUREMENT METHOD _____
DEPTH OF WELL _____ MEASUREMENT METHOD _____
VOLUME REMOVED _____ REMOVAL METHOD _____

FIELD TEST RESULTS:

COLOR _____ pH _____ ODOR _____
TEMPERATURE (°F) _____ SPECIFIC CONDUCTANCE (umhos/cm) _____
OTHER (OVA, Methane meter, etc.) 0.0 ppm

CONSTITUENTS SAMPLED:

P/PCBS Lead, Mercury EPTox Extraction

REMARKS:

Collected from BH-22 0-2'

GAL/FT	WELL CASING VOLUMES			
	1-1/4" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1-1/2" = 0.10	2-1/2" = 0.24	3-1/2" = 0.50	6" = 1.46



DVIRKA
AND
BARTILUCCI

SAMPLE INFORMATION RECORD

SITE Cayuga Island SAMPLE CREW G. Gould

SAMPLE LOCATION/WELL NO. CI-BH-S-22

FIELD SAMPLE I.D. NUMBER 3 ~~BH-22~~ DATE 10/27/92

TIME 13:48 WEATHER Partly Cloudy TEMPERATURE 50°F

SAMPLE TYPE:

GROUNDWATER _____ SEDIMENT _____

SURFACE WATER/STREAM _____ AIR _____

SOIL ✓ OTHER (Describe, i.e., septage, leachate) _____

WELL INFORMATION (fill out for groundwater samples):

DEPTH TO WATER _____ MEASUREMENT METHOD _____

DEPTH OF WELL _____ MEASUREMENT METHOD _____

VOLUME REMOVED _____ REMOVAL METHOD _____

FIELD TEST RESULTS:

COLOR _____ pH _____ ODOR _____

TEMPERATURE (°F) _____ SPECIFIC CONDUCTANCE (umhos/cm) _____

OTHER (OVA, Methane meter, etc.) 0.0 ppm

CONSTITUENTS SAMPLED:

P/PCBS lead, mercury EPTOX extraction

REMARKS: 2-4 ft ~~0-2 ft~~ sample collected from

GAL/FT

1-1/4" = 0.077

1-1/2" = 0.10

WELL CASING VOLUMES

2" = 0.16

2-1/2" = 0.24

3" = 0.37

3-1/2" = 0.50

4" = 0.65

6" = 1.46



DVIRKA
AND
BARTILUCCI

SAMPLE INFORMATION RECORD

SITE Cayuga Island SAMPLE CREW G. Gould
SAMPLE LOCATION/WELL NO. CI-BH-S-23
FIELD SAMPLE ID. NUMBER 84-23 DATE 10/27/92
TIME 14:16 WEATHER Partly Cloudy TEMPERATURE 50°F

SAMPLE TYPE:

GROUNDWATER _____ SEDIMENT _____
SURFACE WATER/STREAM _____ AIR _____
SOIL ✓ OTHER (Describe, i.e., septage, leachate) _____

WELL INFORMATION (fill out for groundwater samples):

DEPTH TO WATER _____ MEASUREMENT METHOD _____
DEPTH OF WELL _____ MEASUREMENT METHOD _____
VOLUME REMOVED _____ REMOVAL METHOD _____

FIELD TEST RESULTS:

COLOR _____ pH _____ ODOR _____
TEMPERATURE (°F) _____ SPECIFIC CONDUCTANCE (umhos/cm) _____
OTHER (OVA, Methane meter, etc.) 0 ppm

CONSTITUENTS SAMPLED:

P/PCBs Lead, mercury EPTOX Extractions

REMARKS: sample collected from 2-4 feet

GAL/FT	WELL CASING VOLUMES			
	1-1/4" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1-1/2" = 0.10	2-1/2" = 0.24	3-1/2" = 0.50	6" = 1.46



DVIRKA
AND
BARTILUCCI

SAMPLE INFORMATION RECORD

SITE Cayuga Island SAMPLE CREW G. Gould

SAMPLE LOCATION/WELL NO. CI-BH-S-24

FIELD SAMPLE I.D. NUMBER 24-24 DATE 10/27/92

TIME 14:50 WEATHER Partly Cloudy TEMPERATURE 50°F

SAMPLE TYPE:

GROUNDWATER _____ SEDIMENT _____

SURFACE WATER/STREAM _____ AIR _____

SOIL ✓ OTHER (Describe, i.e., septage, leachate) _____

WELL INFORMATION (fill out for groundwater samples):

DEPTH TO WATER _____ MEASUREMENT METHOD _____

DEPTH OF WELL _____ MEASUREMENT METHOD _____

VOLUME REMOVED _____ REMOVAL METHOD _____

FIELD TEST RESULTS:

COLOR _____ pH _____ ODOR _____

TEMPERATURE (°F) _____ SPECIFIC CONDUCTANCE (umhos/cm) _____

OTHER (OVA, Methane meter, etc.) 0 ppm

CONSTITUENTS SAMPLED:

P/PCBs Lead, Mercury EPTOX Extraction

REMARKS: Sample collected from 3-4.3ft

GAL/FT 1-1/4" = 0.077
1-1/2" = 0.10

WELL CASING VOLUMES

2" = 0.16
2-1/2" = 0.24

3" = 0.37
3-1/2" = 0.50

4" = 0.65
6" = 1.46

SIR



DVIRKA
AND
BARTILUCCI

SAMPLE INFORMATION RECORD

SITE Cayoga Island SAMPLE CREW G Gould

SAMPLE LOCATION/WELLNO. CI-SS-S-3

FIELD SAMPLE I.D. NUMBER SS-3 → S-25 DATE 10/27/92

TIME 9:52A WEATHER Partly Cloudy TEMPERATURE 45°F

SAMPLE TYPE:

GROUNDWATER _____ SEDIMENT _____

SURFACE WATER/STREAM _____ AIR _____

SOIL ✓ OTHER (Describe, i.e., septage, leachate) _____

WELL INFORMATION (fill out for groundwater samples):

DEPTH TO WATER _____ MEASUREMENT METHOD _____

DEPTH OF WELL _____ MEASUREMENT METHOD _____

VOLUME REMOVED _____ REMOVAL METHOD _____

FIELD TEST RESULTS:

COLOR _____ pH _____ ODOR _____

TEMPERATURE (°F) _____ SPECIFIC CONDUCTANCE (umhos/cm) _____

OTHER (OVA, Methane meter, etc.) _____

CONSTITUENTS SAMPLED:

P/PCBS Lead, Mercury EPTOX Extraction

REMARKS: Collected from 0-2' from BH-25

GAL/FT 1-1/4" = 0.077
1-1/2" = 0.10

WELL CASING VOLUMES

2" = 0.16
2-1/2" = 0.24

3" = 0.37
3-1/2" = 0.50

4" = 0.65
6" = 1.46



DVIRKA
AND
BARTILUCCI

SAMPLE INFORMATION RECORD

SITE Cayuga Island SAMPLE CREW G. Gould

SAMPLE LOCATION/WELL NO. CI-BH-S-25

FIELD SAMPLE I.D. NUMBER BH-S-25 DATE 10/27/92

TIME 10:23A WEATHER Partly Cloudy TEMPERATURE 45°F

SAMPLE TYPE:

GROUNDWATER _____ SEDIMENT _____

SURFACE WATER/STREAM _____ AIR _____

SOIL ✓ OTHER (Describe, i.e., septage, leachate) _____

WELL INFORMATION (fill out for groundwater samples):

DEPTH TO WATER _____ MEASUREMENT METHOD _____

DEPTH OF WELL _____ MEASUREMENT METHOD _____

VOLUME REMOVED _____ REMOVAL METHOD _____

FIELD TEST RESULTS:

COLOR _____ pH _____ ODOR _____

TEMPERATURE (°F) _____ SPECIFIC CONDUCTANCE (umhos/cm) _____

OTHER (OVA, Methane meter, etc.) 0.7ppm

CONSTITUENTS SAMPLED:

P/PCBS Lead, Mercury EPTOX Extraction

REMARKS: Sample collected from 4-6'

GAL/FT 1-1/4" = 0.077
1-1/2" = 0.10

WELL CASING VOLUMES

2" = 0.16 3" = 0.37 4" = 0.65
2-1/2" = 0.24 3-1/2" = 0.50 6" = 1.46

SIR



DVIRKA
AND
BARTILUCCI

SAMPLE INFORMATION RECORD

SITE Cayuga Island SAMPLE CREW G. Gould
SAMPLE LOCATION/WELL NO. CI-BH-S-26
FIELD SAMPLE I.D. NUMBER 26 DATE 10/27/92
TIME 11:05 A WEATHER Partly Cloudy TEMPERATURE 45°F

SAMPLE TYPE:

GROUNDWATER _____ SEDIMENT _____
SURFACE WATER/STREAM _____ AIR _____
SOIL ✓ OTHER (Describe, i.e., septage, leachate) _____

WELL INFORMATION (fill out for groundwater samples):

DEPTH TO WATER _____ MEASUREMENT METHOD _____
DEPTH OF WELL _____ MEASUREMENT METHOD _____
VOLUME REMOVED _____ REMOVAL METHOD _____

FIELD TEST RESULTS:

COLOR _____ pH _____ ODOR _____
TEMPERATURE (°F) _____ SPECIFIC CONDUCTANCE (umhos/cm) _____
OTHER (OVA, Methane meter, etc.) 0.0 ppm

CONSTITUENTS SAMPLED:

P/PCBs Lead, Mercury EPTOX Extraction

REMARKS: Sample collected from 0-2 ft

GAL/FT	WELL CASING VOLUMES			
	1-1/4" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1-1/2" = 0.10	2-1/2" = 0.24	3-1/2" = 0.50	6" = 1.46

SIR



DVIRKA
AND
BARTILUCCI

SAMPLE INFORMATION RECORD

SITE Cayuga Island SAMPLE CREW G. Gould
SAMPLE LOCATION/WELL NO. CI-BH-S-27
FIELD SAMPLE I.D. NUMBER S-27 DATE 10/27/82
TIME 11:44 WEATHER Partly Cloudy TEMPERATURE 45°F

SAMPLE TYPE:

GROUNDWATER _____ SEDIMENT _____
SURFACE WATER/STREAM _____ AIR _____
SOIL ✓ OTHER (Describe, i.e., septage, leachate) _____

WELL INFORMATION (fill out for groundwater samples):

DEPTH TO WATER _____ MEASUREMENT METHOD _____
DEPTH OF WELL _____ MEASUREMENT METHOD _____
VOLUME REMOVED _____ REMOVAL METHOD _____

FIELD TEST RESULTS:

COLOR _____ pH _____ ODOR _____
TEMPERATURE (°F) _____ SPECIFIC CONDUCTANCE (umhos/cm) _____
OTHER (OVA, Methane meter, etc.) 0 ppm

CONSTITUENTS SAMPLED:

P/PCBS Lead, Mercury EPTOX Extraction

REMARKS: Sample Collected from 0-2 ft

GAL/FT	WELL CASING VOLUMES			
	1-1/4" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1-1/2" = 0.10	2-1/2" = 0.24	3-1/2" = 0.50	6" = 1.46



DVIRKA
AND
BARTILUCCI

SAMPLE INFORMATION RECORD

SITE Cayoga Island SAMPLE CREW G. Gould
SAMPLE LOCATION/WELL NO. ~~28~~ S-28
FIELD SAMPLE I.D. NUMBER CI-BH-S-28 DATE 10/28/92
TIME 9:59 WEATHER Overcast TEMPERATURE 38°F

SAMPLE TYPE:

GROUNDWATER _____ SEDIMENT _____
SURFACE WATER/STREAM _____ AIR _____
SOIL ✓ OTHER (Describe, i.e., septage,
leachate) _____

WELL INFORMATION (fill out for groundwater samples):

DEPTH TO WATER _____ MEASUREMENT METHOD _____

DEPTH OF WELL _____ MEASUREMENT METHOD _____

VOLUME REMOVED _____ REMOVAL METHOD _____

FIELD TEST RESULTS:

COLOR _____ pH _____ ODOR _____

TEMPERATURE (°F) _____ SPECIFIC CONDUCTANCE (umhos/cm) _____

OTHER (OVA, Methane meter, etc.) 0.0 ppm

CONSTITUENTS SAMPLED: P/Pb Pb/Hg EPTOX

REMARKS: Sampled 2'-4' below ground surface

GAL/FT	WELL CASING VOLUMES			
	1-1/4" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1-1/2" = 0.10	2-1/2" = 0.24	3-1/2" = 0.50	6" = 1.46



DVIRKA
AND
BARTILUCCI

SAMPLE INFORMATION RECORD

SITE Cayuga Island SAMPLE CREW G. Gould

SAMPLE LOCATION/WELLNO. SE-5-29

FIELD SAMPLE I.D. NUMBER CI-55-5-4 DATE 10/28/92

TIME 8:59 WEATHER partly sunny 45°F TEMPERATURE 45°F

SAMPLE TYPE:

GROUNDWATER _____ SEDIMENT _____

SURFACE WATER/STREAM _____ AIR _____

SOIL ✓ OTHER (Describe, i.e., septage, leachate) _____

WELL INFORMATION (fill out for groundwater samples):

DEPTH TO WATER _____ MEASUREMENT METHOD _____

DEPTH OF WELL _____ MEASUREMENT METHOD _____

VOLUME REMOVED _____ REMOVAL METHOD _____

FIELD TEST RESULTS:

COLOR _____ pH _____ ODOR _____

TEMPERATURE (°F) _____ SPECIFIC CONDUCTANCE (umhos/cm) _____

OTHER (OVA, Methane meter, etc.) 0.0 ppm

CONSTITUENTS SAMPLED: Pb/Pb's Pb/Hg ELTOX

REMARKS:

Sampled from 0-2' below ground surface. This surface sample was mistakenly taken at S-29 (workplan called for S-28). Since no extra sample jars were available, no surface sample was taken at S-28. This location does not alter the intent of surface sample location and will fulfill project requirements.

WELL CASING VOLUMES				
GAL/FT	1-1/4" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1-1/2" = 0.10	2-1/2" = 0.24	3-1/2" = 0.50	6" = 1.46



DVIRKA
AND
BARTILUCCI

SAMPLE INFORMATION RECORD

SITE Cayuga Island SAMPLE CREW G. Gould

SAMPLE LOCATION/WELLNO. ~~SE~~ S-29

FIELD SAMPLE I.D. NUMBER CI-BH-S-29 DATE 10/28/92

TIME 9:18 WEATHER Partly Sunny TEMPERATURE 45°

SAMPLE TYPE:

GROUNDWATER _____ SEDIMENT _____

SURFACE WATER/STREAM _____ AIR _____

SOIL ✓ OTHER (Describe, i.e., septage, leachate) _____

WELL INFORMATION (fill out for groundwater samples):

DEPTH TO WATER _____ MEASUREMENT METHOD _____

DEPTH OF WELL _____ MEASUREMENT METHOD _____

VOLUME REMOVED _____ REMOVAL METHOD _____

FIELD TEST RESULTS:

COLOR _____ pH _____ ODOR _____

TEMPERATURE (°F) _____ SPECIFIC CONDUCTANCE (umhos/cm) _____

OTHER (OVA, Methane meter, etc.) 0.0 ppm

CONSTITUENTS SAMPLED: 1/PCB Hg/Pb EPTOX

REMARKS: _____

Sampled from 2.2' to 4.2' below ground surface

GAL/FT	WELL CASING VOLUMES			
	1-1/4" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1-1/2" = 0.10	2-1/2" = 0.24	3-1/2" = 0.50	6" = 1.46



DVIRKA
AND
BARTILUCCI

SAMPLE INFORMATION RECORD

SITE Cayuga Island SAMPLE CREW G. Gould
SAMPLE LOCATION/WELLNO. SE-5-30
FIELD SAMPLE I.D. NUMBER CI-BH-5-30 DATE 10/28/72
TIME 8:32 WEATHER Overcast TEMPERATURE 38°F

SAMPLE TYPE:

GROUNDWATER _____ SEDIMENT _____
SURFACE WATER/STREAM _____ AIR _____
SOIL ✓ OTHER (Describe, i.e., septage,
leachate) _____

WELL INFORMATION (fill out for groundwater samples):

DEPTH TO WATER _____ MEASUREMENT METHOD _____
DEPTH OF WELL _____ MEASUREMENT METHOD _____
VOLUME REMOVED _____ REMOVAL METHOD _____

FIELD TEST RESULTS:

COLOR _____ pH _____ ODOR _____
TEMPERATURE (°F) _____ SPECIFIC CONDUCTANCE (umhos/cm) _____
OTHER (OVA, Methane meter, etc.) 2.4 ppm

CONSTITUENTS SAMPLED: P/PCB Pb/Hg EDTA

REMARKS: sampled from 2' to 4' below ground surface

GAL/FT	WELL CASING VOLUMES			
	1-1/4" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1-1/2" = 0.10	2-1/2" = 0.24	3-1/2" = 0.50	6" = 1.46



DVIRKA
AND
BARTILUCCI

SAMPLE INFORMATION RECORD

SITE Cayuga Island SAMPLE CREW G. Gould

SAMPLE LOCATION/WELLNO. CI - BH - S - FB

FIELD SAMPLE I.D. NUMBER Field Blank DATE 10/27/92

TIME 14:25 WEATHER Partly Cloudy TEMPERATURE 50°F

SAMPLE TYPE:

GROUNDWATER _____ SEDIMENT _____

SURFACE WATER/STREAM _____ AIR _____

SOIL Field Blank OTHER (Describe, i.e., septage, leachate) Water / Field Blank

WELL INFORMATION (fill out for groundwater samples):

DEPTH TO WATER _____ MEASUREMENT METHOD _____

DEPTH OF WELL _____ MEASUREMENT METHOD _____

VOLUME REMOVED _____ REMOVAL METHOD _____

FIELD TEST RESULTS:

COLOR _____ pH _____ ODOR _____

TEMPERATURE (°F) _____ SPECIFIC CONDUCTANCE (umhos/cm) _____

OTHER (OVA, Methane meter, etc.) N/A

CONSTITUENTS SAMPLED:

P/PCBs Lead Mercury

REMARKS: Collected over 3 inch Spoon between BH-23
And BH-24

GAL/FT 1-1/4" = 0.077
1-1/2" = 0.10

WELL CASING VOLUMES

2" = 0.16
2-1/2" = 0.24

3" = 0.37
3-1/2" = 0.50

4" = 0.65
6" = 1.46

SIR

APPENDIX A-4

CHAIN OF CUSTODY FORMS

CHAIN OF CUSTODY RECORD

Page 3 of 3

Client Name: Pirita & Bartolucci Project #: 1148 Project Name: Chyuga P.O. # _____
Client Address: 6800 Jericho Tpke, Syosset NY Telephone # 516-364-9892
Report To: Maria Dioguardi Date Results Required: 4 weeks After Invoice To: Maria Dioguardi
VTSR

[illegible]

Relinquished by (Signature)

Date / Time

Received by (Signature)

Relinquished by (Signature)

Date / Time

Received by (Signature) _____

Relinquished by (Signature)

Date / Time

Received by (Signature)

Remarks:

REMARKS:
~~10 Jars for P/PCB and EPTOX~~
~~8 Jars for Hg and Pb (one jar for sample)~~
~~spike + dup)~~

CHAIN OF CUSTODY RECORD

Page 1 of 2

Client Name: Dvirka & Barthlucci Project #: 1148 Project Name: Cayuga P.O. # _____
Client Address: 6800 Jericho Tpke, Syosset, NY Telephone # 516-364-9892
Report To: Maria Dioguardi Date Results Required: _____ Invoice To: Maria Dioguardi

[illegible]

Relinquished by (Signature)

Date / Time

Received by (Signature)

Remarks:

None In Center

10/19/42/17:00

UPS (ground)

Remarks:

~~10 jars for P/PCB and EPTOX~~
~~8 jars for Hg and Pb / one jar for sample, spike + dup)~~

Relinquished by (Signature)

Date / Time

Received by (Signature)

Relinquished by (Signature)

Date / Time

Received by (Signature)

COA

CHAIN OF CUSTODY RECORD

Page ____ of ____

Client Name: Dvirka & Burt/Vaca Project #: 1148 Project Name: Cayuga P.O. # _____
Client Address: 6800 Jericho Tpke, Syosset, NY Telephone # 516-364-9092
Report To: Mama Draguardi Date Results Required: _____ Invoice To: Mama Draguardi

[illegible]

Page of

Sample Identification

Sample Type

[illegible]

Comments

1 liter glass jar
1 liter plastic jar

Date / Time

Received by (Signature)

Remarks:

Relinquished by (Signature)

Date / Time

Received by (Signature)

Relinquished by (Signature)

Date / Time

Received by (Signature)

Remarks:
10 jars for P/PCB and EPTOX
8 jars for Hg and Pb (one jar for sample, sp, let + dup)

APPENDIX A-5

ADDITIONAL INFORMATION

DAILY EQUIPMENT CALIBRATION LOG

Project Name: Cayuga Island

Date: 10/27/92

Project Number: J 448

Calibrated By: E Gould

[illegible]



PROJECT NAME: Cayuga Island DATE: 10/27/92
PROJECT NUMBER: 1148 INSTRUMENT: Microtip
RECORDED BY: G. Gould CALIBRATION DATE: 10/27/92
WEATHER CONDITIONS: Cool, overcast

[illegible]

RECORDING PROCEDURES/REMARKS: cut sample longitudinally & analyze
air between sample halves



Calibrated By: Gerry Gould

DECL



PROJECT NAME: Cayuga Island DATE: 10/28/92
PROJECT NUMBER: 1148 INSTRUMENT: Microtipe
RECORDED BY: Gerry Gould CALIBRATION DATE: 10/28/92
WEATHER CONDITIONS: _____

[illegible]

RECORDING PROCEDURES/REMARKS: _____

Cut sample longitudinally and analyze air between sample halves



APPENDIX B

DATA VALIDATION REPORT



ENVIRONMENTAL ENGINEERS & SCIENTISTS

SILVER SPRING

GRAND RAPIDS

DETROIT

DENVER

CCJM DOCUMENT NO: CIODS009.RVW

ORGANICS DATA VALIDATION REPORT

Case No. 1148 Project NYSDEC
Site Cayuga Island Project Name D & B Standby
Contract Laboratory E 3 I Client Dvirka & Bartilucci
Sample Delivery Group (SDG) BHS22 Sampling Date (Month/Year) 10/92
Type of Analyses/Special Request Pesticides, PCB's

Sample Number	Sample Matrix	V	B	P
BHSFB	Water	-	-	X
BHS19(2)	Soil	-	-	X
BHS20(2)	Soil	-	-	X
BHS21(2)	Soil	-	-	X
BHS21(2)DL	Soil	-	-	X
BHS22(2)	Soil	-	-	X
BHS23(2)	Soil	-	-	X
BHS24(3)	Soil	-	-	X
BHS25(4)	Soil	-	-	X
BHS25(4)DL	Soil	-	-	X
BHS26(0)	Soil	-	-	X

Sample Number	Sample Matrix	V	B	P
BHS26(0)DL	Soil	-	-	X
BHS27(0)	Soil	-	-	X
BHS28(2)	Soil	-	-	X
BHS29(2.2)	Soil	-	-	X
BHS30(2)	Soil	-	-	X
SSS1	Soil	-	-	X
SSS2	Soil	-	-	X
SSS3	Soil	-	-	X
SSS4	Soil	-	-	X
SSS4DL	Soil	-	-	X
SSS5	Soil	-	-	X
SSS6	Soil	-	-	X

Laboratory QC Samples

# of Samples Analyzed:	-	-	19
Total # of Analyses:	-	-	23

V = CLP Volatiles B = CLP Semivolatiles P = CLP Pesticide/PCB's

X = Analysis has been provided for validation.

0 = Analysis was requested per the Chain of Custody, however, no data was received for validation.

- = Analysis was not requested per the Chain of Custody or required to meet criteria.

MS = matrix spike MSD = matrix spike duplicate Dup = matrix duplicate RE = reanalysis DL = dilution analysis

Data Reviewer Vernon Yost Date 1/29/93
QA Review by Jeralyn Guthrie Date 1/29/93
CCJM Approval by Richard Cheatham Date 1/29/93

Contractual violations found? Yes X No Not Appl.
NYSDEC Compliancy Summary attached? Yes X No Not Appl.

Remarks: Copies of correspondence concerning resubmissions are attached.

Attachments:

- I. NYSDEC Compliancy Summary
- II. Laboratory Case Narratives, Telephone Logs and Correspondence
- III. Data Validator Worksheets
- IV. Qualified Sample Results (Form 1's)

Note:

-- The EPA Functional Guidelines for Evaluating Organics Analyses, 1988 - (Data Review SOP), NYSDEC protocols, and project specific planning documents have been used by the data reviewer as a basis for reviewing the data and applying qualifiers, except as specifically noted in review comments.

-- Please see data qualifier and sub-qualifier definitions on the last page. This scheme of qualifiers is intended to help indicate the reasons or problems which cause sample data values to be qualified.

C.C. JOHNSON & MALHOTRA, P.C.

12567 WEST CEDAR DRIVE, SUITE 220 • LAKEWOOD, CO 80228

Telephone (303) 987-2928 • Fax (303) 987-3516

Quality Service Since 1979

NY ASP: 1989

DATA COMPLETENESS CHECKLIST

- X Included: no problems
- O Not Included and/or Not Available
- NR Not Required
- RS Provided as Resubmission

X Case Narrative

Quality Control Summary Package

- X Surrogate Recovery Summary (Form II)
- X MS/MSD Summary (Form III)
- X Reagent Blank Summary (Form IV)
- NR GC/MS Tuning and Mass Calibration (Form V)
- NR Internal Standard Area Summary (Form VIII)

Sample Data Package

- X Holding Times (Custody and/or shipping records)
- X Organic Analysis Data Sheets (Form I) all pages for each sample, arranged in increasing sample number order
- NR Reconstructed Ion Chromatogram(s) (RIC)
- X GC/EC Chromatograms
- X Quantitation Reports
- NR Mass Spectral Data
- NR EPA/NIH Mass Spectral Library Search for TIC's

Standards Data Package

- X Current List of Laboratory/Instrumental Detection Limits
- X Initial Calibration Data for each instrument
- X Continuing Calibration Data for each instrument
- X Pesticide Evaluation Standards Summary (Form VIII)
- X Pesticide/PCB Standards Summary (Form IX)
- X Pesticide/PCB Identification (Form X) if any positive results
- NR VOA and BNA Standards Reconstructed Ion Chromatograms (RIC)
- NR VOA and BNA Standards Quantitation Reports
- X Pesticide/PCB Standard Chromatograms and Data System Printouts

Raw QC Data Package

- NR DFTPP and BFB mass spectra and mass listings
- X Reagent Blank Data
 - X Organic Analysis Data Sheets (Form I)
 - NR Reconstructed Ion Chromatograms (RIC)
 - X Quantitation Reports
 - NR Mass Spectral Data
 - NR EPA/NIH Library Search of TIC's
 - X GC/EC Chromatograms and Data System Printouts
- X Matrix Spike and Matrix Spike Duplicate Data
 - X Organic Analysis Data Sheets (Form I)
 - NR Reconstructed Ion Chromatograms (RIC)
 - X Quantitation Reports
 - X GC/EC Chromatograms and Data System Printouts

I. Holding Times

All samples were extracted and analyzed within holding times specified in the NYSDEC CLP Analytical Services Protocol (ASP), 1989, or in project plans, as applicable. See the following table for a summarization of sample holding times.

Yes _____ No X

Comments: An asterisk and number in parentheses indicate a sample fraction outside holding time specifications and the number of days exceeded based on the validated time of sample receipt (VTSR). All sample extracts were analyzed within 40 days of their extraction. The results for the indicated sample fraction(s) have been qualified as estimated (J-H/U-H). Data have been qualified only in those instances where the holding time was exceeded on both columns.

Holding Time Summary

Sample No.	Sampling Date	VTSR	Extract	Pesticide	
				Analysis	
				Primary	Confirmation
BHSFB	10/27/92	10/28	11/2	12/7	12/7
BHS19(2)	10/28/92	10/29	11/3	12/8	12/8
BHS20(2)	10/28/92	10/29	11/3	12/8	12/8
BHS21(2)	10/28/92	10/29	11/3	12/8	12/8
BHS21(2)DL	10/28/92	10/29	11/3	12/8	12/8
BHS22(2)	10/27/92	10/28	11/2	12/7	12/8 *(1)
BHS23(2)	10/27/92	10/28	11/2	12/7	12/7
BHS24(3)	10/27/92	10/28	11/2	12/7	12/7
BHS25(4)	10/27/92	10/28	11/2	12/7	12/9 *(2)
BHS25(4)DL	10/27/92	10/28	11/2	12/8 *(1)	12/8 *(1)
BHS26(0)	10/27/92	10/28	11/2	12/8 *(1)	12/9 *(2)
BHS26(0)DL	10/27/92	10/28	11/2	12/8 *(1)	12/8 *(1)
BHS27(0)	10/27/92	10/28	11/2	12/8 *(1)	12/9 *(2)
BHS28(2)	10/28/92	10/29	11/3	12/8	12/8
BHS29(2.2)	10/28/92	10/29	11/3	12/8	12/8
BHS30(2)	10/28/92	10/29	11/3	12/8	12/8
SSS1	10/28/92	10/29	11/3	12/8	12/8
SSS2	10/27/92	10/28	11/2	12/7	12/9 *(2)
SSS3	10/27/92	10/28	11/2	12/7	12/9 *(2)
SSS4	10/28/92	10/29	11/3	12/8	12/8
SSS4DL	10/28/92	10/29	11/3	12/8	12/8
SSS5	10/27/92	10/28	11/2	12/7	12/8 *(1)
SSS6	10/27/92	10/28	11/2	12/7	12/8 *(1)

II. Instrument Calibration (Pesticide/PCB)

- A. All linearity check criteria were met with a %RSD value less than 10% for all quantitation column calibrations.

Yes X No

Comments: No comments.

- B. The breakdown of 4,4'-DDT and endrin was less than 20% for all evaluation B quantitative analyses.

Yes No X

Comments: The EVAL B standards that have exceeded breakdown criteria are noted on the attached Tables 1-P. Samples associated with a non-compliant EVAL B standard, and showing positive endrin results, have been flagged as estimated (J-C) for the analytes showing a > 20% breakdown. For samples in which endrin was undetected but the breakdown products (endrin ketone/endrin aldehyde) showed positive results, the quantitation limits for endrin were qualified as unusable (R-C) and the breakdown products were qualified as estimated and tentatively identified (JN-C). In one EVAL B standard, the 4,4'-DDT exceeded criteria; however, no samples required qualification for this situation.

- C. The pesticide standard compounds showed a %D of the calibration factor of no more than 15% for quantitation and 20% for confirmation runs for all compounds identified.

Yes No X

Comments: Samples containing positive results associated with an out-of-control INDA or INDB standard have been qualified for the respective compounds as estimated (J-C). It was noted by the reviewer that additional INDA and INDB standards were listed on Form 8E and in the run log, but were not included in the package; however, the 1989 NYSDEC ASP allows either INDA or INDB to be run after every 10 samples and does not require both to be run. The analytes contained in any provided standard bracketing sample analyses have been used in determining qualifiers for the associated samples. The reviewer has found a number of INDA/INDB standards showing out-of-control %D's, and considered the potential need for both INDA and INDB that were run with every 10 samples in order to limit the number of samples being qualified. Please refer to the attached resubmission request.

- D. The retention time of 4,4'-DDT was greater than 12 minutes for packed columns (except OV-101).

Yes _____ No _____ Not applicable X

Comments: The laboratory utilized wide bore (0.53mm I.D.) capillary columns for pesticide analysis.

- E. The retention time for the surrogate (DBC) was within criteria for every sample.

Yes _____ No X

Comments: In several instances surrogates were diluted out, thus preventing assessment of potential retention time shifts.

III. Blanks

- A. Method Blank - The blank analyses were reviewed. The frequency of method blank extractions and analyses and the contaminants found in blank samples were all within specified limits.

Yes X No _____

Comments: Contaminant quantities found in contract compliant laboratory preparation blanks and a listing of qualifiers added to sample results on Form 1's are summarized on the attached Table 1.

- B. Trip Blank - The associated trip/travel blank(s) contained contaminants which affected samples in the package.

Yes _____ No _____ None Identified X

Comments: No comments.

- C. Other Blanks - No contaminants were found in the field blank identified as BHSFB.

IV. Surrogate Recovery

The surrogate recoveries were reviewed. The recoveries were all within specified QC criteria.

Yes _____ No X

Comments: Samples found to have surrogate recoveries outside specified criteria are summarized on Tables 1 and 2. Data qualifiers, when necessary, are indicated on Table 2. Samples in the data package which were diluted at 100x or greater exhibited peaks identified as the DBC surrogate that were at or below the noise level. Out-of-control surrogate recoveries in such samples did not result in any qualification due to the large error inherent in the determination of noise-level peaks that are subject to interference problems. In the situation where both analyses of the sample (SSS4) resulted in 0% surrogate recoveries, all results have been qualified as estimated (J-S/U-S). Both analyses of the sample were at significant dilutions.

V. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

No matrix spike and matrix spike duplicate was indicated in field records as being required for any of the samples in this set. The laboratory case narrative or field records provided by the client did not reference any other work order number as containing the associated MS/MSD. Sample data in this package have not been qualified on this basis, however.

VI. Field Duplicate Results

This package contained a field duplicate sample.

Yes _____ No _____ Not identified X

Comments: No comments.

VII. Internal Standard (IS) Performance

The internal standard results were reviewed for consistency in response (area counts) and retention time. All sample internal standards showed adequate performance and consistency.

Yes ☐ No ☐ Not Applicable ☒ X

Comments: No comments.

VIII. TCL Compound Identification

Positive results were evaluated to determine that all criteria were met in identifying TCL compounds from the sample data. In all cases, the reported compounds matched the retention time and, when applicable, the mass spectral profile.

Yes ☒ X No ☐

Comments: Confirmation by GC/MS was required (but not performed by the laboratory) for the following samples which contained >10 ng/ μ l of pesticides in their initial and diluted extracts: BHS25(4), BHS26(0), SSS4 and BHS21(2).

IX. Compound Quantitation and Reported Detection Limit

Quantitative results and reported detection limits were reviewed and were determined to be accurate.

Yes ☒ X No ☐

Comments: See items I, II and IV for a discussion of deficiencies which potentially affect quantitative accuracy.

X. System Performance

The instrumental and analytical systems used in the analysis of these samples maintained an acceptable level of performance throughout this case.

Yes _____ No X

Comments: See sections II.B and II.C for discussions of 4,4'-DDT/Endrin breakdown and continuing calibration problems, respectively.

XI. Overall Assessment of Data in the Case

Data have met analytical quality criteria and are within applicable guideline limits except where qualifiers are noted within this report as being required.

Yes X No _____

Comments: A large number of non-target analyte peaks were evident, as well as evidence of significant interference problems in finding and determining the surrogate peak and its recovery. High level dilutions were necessary in a number of instances and GC/MS confirmation was not available. Matrix spike data was not provided to assist with assessment of interference problems. Extract clean-ups may have been advisable.

XII. Contract Requirements

All contract requirements were met by the laboratory in the analyses of the samples in the package.

Yes _____ No X

Comments: Contract requirements were not met for holding times, endrin/DDT breakdowns, continuing calibrations and GC/MS confirmations were not performed.

XIII. General Comments

The attached Table is the New York State Department of Environmental Conservation Compliance Summary.

EXPLANATION OF ORGANICS DATA QUALIFIERS

For the purposes of this data review document the following code letters and associated definitions are provided:

- U - The material was analyzed for, but was not detected. The associated numerical value is the estimated quantitation limit.
- R - Quality Control indicates that data are not usable (i.e. compound may or may not be present). Resampling and re-analysis are necessary to determine the presence or absence of the analyte in the sample.
- UJ-B - The compound is considered to be undetected and the value reported is an estimated detection limit because the compound was identified in the laboratory blank as well as in the sample. The value of this reported detection limit (DL) is determined by the amount of the compound found in the sample:
- 1) the sample value was less than the CRDL: the DL is reported as equal to the CRDL.
 - 2) the sample value was greater than CRDL but less than 5X the amount of the compound found in the laboratory blank (less than 10X for methylene chloride, acetone, 2-butanone, toluene and phthalates): the DL is reported as equal to the reported sample value.
 - 3) the sample value was greater than 5X the laboratory blank value (10X for compounds noted above): see JB qualifier.
- J-B - The reported value is an estimated amount. The compound was detected in the blank and the quantity reported in the sample is greater than 5X the amount found in the blank (greater than 10X for above compounds).
- J - The associated numerical value is an estimated quantity because the amount detected is below the required detection limits or because quality control criteria were not met. (See qualifiers listed below)
- J-C - The value reported was estimated due to instrument calibration problems.
- J-H - The value reported was estimated due to holding time violation.
- J-S - The value reported was estimated due to surrogate or matrix spike recovery problems.
- J-I - The value reported was estimated due to internal standard recovery deficiencies.
- J-E - The value reported was estimated due to interference problems.
- J-M - Benzo(b) and Benzo(k) Fluoranthene not separated due to matrix.
- J-N - Tentative identification of a compound. Resampling and re-analysis would be necessary for verification of identity.
- J-A - TIC identified as an aldol condensate.

ATTACHMENT I
NYSDEC COMPLIANCY SUMMARY

NYSDEC Compliance Summary Table

Site: Cayuga Island

SDG/Case#	Sampling Date	NYSDEC CLP Year	Sample #	Matrix	VOA Compliance	BNA Compliance	Pest/PCB Compliance	Metals Compliance	CN-Compliance	Other Compliance	Non-Compliance
BHS22/1148	10/92	1989	BHSFB	Water	NA	NA	No	NA	NA	NA	4
BHS22/1448	10/92	1989	BHS19(2)	Soil	NA	NA	No	NA	NA	NA	2
BHS22/1448	10/92	1989	BHS20(2)	Soil	NA	NA	Yes	NA	NA	NA	
BHS22/1448	10/92	1989	BHS21(2)	Soil	NA	NA	No	NA	NA	NA	1
BHS22/1448	10/92	1989	BHS21(2)DL	Soil	NA	NA	No	NA	NA	NA	1
BHS22/1448	10/92	1989	BHS22(2)	Soil	NA	NA	Yes	NA	NA	NA	
BHS22/1448	10/92	1989	BHS23(2)	Soil	NA	NA	Yes	NA	NA	NA	
BHS22/1448	10/92	1989	BHS24(3)	Soil	NA	NA	No	NA	NA	NA	4
BHS22/1448	10/92	1989	BHS25(4)	Soil	NA	NA	No	NA	NA	NA	1
BHS22/1448	10/92	1989	BHS25(4)DL	Soil	NA	NA	No	NA	NA	NA	1,3
BHS22/1448	10/92	1989	BHS26(0)	Soil	NA	NA	No	NA	NA	NA	1,3
BHS22/1448	10/92	1989	BHS26(0)DL	Soil	NA	NA	No	NA	NA	NA	1,3
BHS22/1448	10/92	1989	BHS27(0)	Soil	NA	NA	No	NA	NA	NA	1,3
BHS22/1448	10/92	1989	BHS28(2)	Soil	NA	NA	No	NA	NA	NA	1
BHS22/1448	10/92	1989	BHS29(2.2)	Soil	NA	NA	No	NA	NA	NA	1
BHS22/1448	10/92	1989	BHS30(2)	Soil	NA	NA	No	NA	NA	NA	1,2
BHS22/1448	10/92	1989	SSS1	Soil	NA	NA	No	NA	NA	NA	2
BHS22/1448	10/92	1989	SSS2	Soil	NA	NA	No	NA	NA	NA	1
BHS22/1448	10/92	1989	SSS3	Soil	NA	NA	No	NA	NA	NA	1
BHS22/1448	10/92	1989	SSS4	Soil	NA	NA	No	NA	NA	NA	1
BHS22/1448	10/92	1989	SSS4DL	Soil	NA	NA	No	NA	NA	NA	1
BHS22/1448	10/92	1989	SSS5	Soil	NA	NA	Yes	NA	NA	NA	
BHS22/1448	10/92	1989	SSS6	Soil	NA	NA	Yes	NA	NA	NA	

1. Qualification due to Continuing Calibration Problem.
2. Qualification due to 4,4'-DDT and/or endrin breakdown.
3. Qualification due to VTSR → analysis holding time exceeded.
4. Qualification due to surrogate recovery problems.

ATTACHMENT II

LABORATORY CASE NARRATIVES, TELEPHONE LOGS AND CORRESPONDENCE

CASE NARRATIVE

LAB NAME: Energy & Environmental Engineering, Inc. (E3I)

CASE NO.: 1148 SDG: BHS22(2) (Cayuga)

SAMPLE NO.: SSS1, SSS2, SSS3, SSS4, SSS5, SSS6, BHS19(2),
BHS20(2), BHS21(2), BHS22(2), BHS23(2), BHS25(4),
BHS26(0), BHS27(0), BHS28(2), BHS29(2), BHS30(2),
BHSFB,

PESTICIDES/PCBs: An "H" on a chromatogram indicates that the height was used for quantitation. An "M" on a chromatogram indicates that the peak height in millimeters was used for quantitation. A "Q" on a chromatogram indicates that the peak was used for quantitation of Aroclors or Toxaphene.

All samples were quantitated on the DB-608 column.

The following samples were analyzed 41 days from VTSR on the quantitation column: BHS25(4) DL, BHS26(0) and BHS27(0).

The analyses for these samples were performed within 40 days from sample extraction.

The following samples were confirmed after 40 days from VTSR on the non-quantitation column: SSS2, SSS3, SSS5, SSS6, BHS22(2), BHS25(4), BHS25(4) DL, BHS26(0), BHS26(0) DL and BHS27(0)

Confirmation analyses for these samples were performed within 40 days from sample extraction.

The following samples had DBC surrogate compound recoveries outside the QC advisory limits due to coelution with an unknown compound: BHS21(2), BHS21(2) DL, BHS24(3), BHS25(4), BHS26(0),

The DBC surrogate compound recovery was outside the QC advisory for BHSFB.

It is acknowledged that the following deviations from protocols were found on the DB-608 column:

- Endrin breakdown was > 20% for EVALB on 12-6-92 @ 21:20
EVALB2 on 12-6-92 @ 7:06
EVALB3 on 12-7-92 @ 14:34
EVALB4 on 12-7-92 @ 22:37
- For INDB2, delta-BHC, endrin, DDD, endosulfan sulfate, endrin ketone had > 15% D.
- For INDB4, endrin and endosulfan sulfate had > 15% D.
- For INDA5, gamma-BHC, heptachlor, heptachlor epoxide, endosulfan I, dieldrin, endosulfan II and DDT had > 15% D.
- For INDB6, beta-BHC, DDE, endrin, endosulfan sulfate, gamma-chlordane and alpha-chlordane had > 15% D.
- For INDA7 heptachlor, endosulfan I, endosulfan II DDT and methoxychlor had > 15% D.

Case Narrative, continued

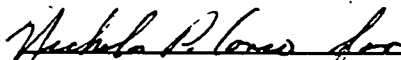
- For INDB7, delta-BHC, endrin, endosulfan sulfate, endrin ketone had > 15% D.

It is acknowledged that the following deviations from protocols were found on the DB-1701 non-quantitation column:

- Linearity was >10% for endrin, DDT and DBC.
- Endrin breakdown was >20% for EVALB2 on 12-7-92 @ 8:19
EVALB6 on 12-8-92 @ 20:05
- DDT >20% for EVALB6 on 12-8-92 @ 20:05
- For INDA2, endosulfan sulfate had > 20% D.
- For INDB5, endrin had > 20% D.
- For INDA6, heptachlor, aldrin, heptachlor epoxide, endosulfan I, dieldrin, DDT and methoxychlor had > 20% D.
- For INDA7, DDT and methoxychlor had > 20% D.
- For INDB7, beta-BHC, delta-BHC, DDE, endosulfan sulfate, endrin ketone, gamma-chlordane and alpha-chlordane had >20% D.

Method blanks PBLK02 and PBLK14 contained a peak eluting in the retention time windows of beta-BHC.

"I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature."


Nora J. Conlon, Ph.D.
Director, Organic Laboratory

December 16, 1992

MEMORANDUM

TO: Robin Petrella, Dvirka & Bartilucci

FROM: *V. Yost* Vernon Yost, *J. Guthrie* Jeralyn Guthrie, *R. Cheatham* Richard Cheatham,
CCJM/Denver

DATE: December 30, 1992

DOCUMENT NO: CIRAI007.MEM

SUBJECT: Pesticide/PCB Analyses: Requests for Additional
Information/Data for data package SDG BHS22/Case
1148

Preliminary data review has been performed on the pesticide/PCB data package generated for Cayuga Island by Energy & Environmental, Inc., identified as SDG BHS22 / Case 1148. The following item requires clarification and potential resubmissions for completion of the review process:

The following continuing calibration Form 9 summaries and associated raw data were not found in the data package. Please provide these items.

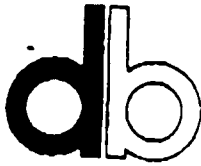
<u>GC Column ID DB608</u>			<u>GC Column ID DB1701</u>		
Analysis			Analysis		
<u>CCAL Mix ID</u>	<u>Date</u>	<u>Time</u>	<u>CCAL Mix ID</u>	<u>Date</u>	<u>Time</u>
INDA2	12/7/92	1108	INDB2	12/7/92	1206
INDB3	12/7/92	1910	INDA5	12/8/92	1540
INDA4	12/8/92	0204	INDB6	12/8/92	2322
INDB5	12/8/92	1302			
INDA6	12/8/92	1814			

Please reference the above document number when submitting responses to this request. If you have any questions about the above requests, please call us at (303) 987-2928.

cc: PF - Cayuga Island
Roger Simon, CCJM/Denver
Data Review
Data File

C.C. JOHNSON & MALHOTRA, P.C.

12567 WEST CEDAR DRIVE, SUITE 220 • LAKEWOOD, CO 80228
Telephone (303) 987-2928 • Fax (303) 987-3516



**Dvirka
and
Bartilucci**
CONSULTING ENGINEERS

C.C.J.M.

JAN 14 1993

RECEIVED

RESUBMISSION

CC PF-Cayuga Island
JG RS VY DF DR

6800 Jericho Turnpike, Syosset, New York 11791
516-364-8882 • Fax: 516-364-9045

TELEFAX NO.: 516-364-9045

DATE: 1/19/93

TO: Vernon Yost, Jeralyn Guthrie, R. Cheatham

ATTENTION: CCJM

TELEFAX NO.: 303-987-3516

FROM: R. Petrella

NO. OF PAGES: 2
(including cover sheet)

SUBJECT: Cayuga Island

MESSAGE: _____

The telecopier model we operate is 7020 by XEROX

Energy & Environmental
Engineering, Inc.

35 Medford Street
Somerville, MA 02143
(617) 666-5500

Mailing Address

P.O. Box 218
E. Cambridge, MA 02141

E³I

RESUBMISSION

RS 1/1/93

January 13, 1993

Ms. Robbin Petrella
Dvirka & Bartilucci
6800 Jericho Turnpike
Syosset, NY 11791

RE: Data Validation Request for Pesticide/PCB Analysis for Cayuga
Island. CCJM Document No. CIRAI007.MEM

Dear Ms. Petrella:

In response to the inquiry faxed January 11, 1993, the following
clarification is submitted from the Pesticide/PCB laboratory in
regard to continuing calibrations.

As stated in the NYSDEC ASP 1989 on page D-IV-46, the proper
analytical sequence is as follows: Initial standards, 5
analytical samples, EVALB, 5 samples, INDA or INDB, 5 analytical
samples, EVALB, 5 analytical samples, INDA or INDB (whichever
standard was not previously analyzed). . . ending with INDA and
INDB.

We analyze both INDA and INDB during the run in case the instrument
changes sensitivity and we cannot use the entire sequence.
However, only alternating standards are required to be reported as
was done in this data package.

If you have any additional questions, please do not hesitate to
call.

Sincerely,

Nora J. Conlon

Nora J. Conlon, Ph.D.
Project Manager
Director, Organic Laboratory

ATTACHMENT III
DATA VALIDATOR WORKSHEETS

TABLE 1
Pesticide/PCB Qualifier Summary
Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date: 12-7-8/92

Instrument ID: GC1GC

Method Blank ID(s): PBLKS2

Extract Date(s): 11-2-92

Endrin breakdown / DDT breakdown

B3	30.12	OK
B4	20.62	OK
B5	OK	OK
B6	OK	OK

EVAL	Sample Identifier:	Hold Time		Surr Rec.	Last IND Standard Before Analysis:						
		Ext.	Anal.		1	2	3	4	5	6	7
B3	BHS 23(2)	OK	OK	OK		X					
B3	BHS 24(3)		OK	>		X					
B4	BHS 25(4)		OK	>		X					
B4	SSS 2		OK	OK		X					
B4	SSS 3		OK	OK		X					
B4	SSS 5		OK	OK				X			
B4	SSS 6		OK	OK				X			
B4	BHS 22(2)		OK	OK				X			
B5	BHS 26(0) DL		+1	D						X	
B5	BHS 25(4) DL		+1	D						X	
B5	BHS 27(0)	✓	+1	OK						X	

D = diluted out

PRIMARY COLUMN: DB608		12-6-7/92 Calibrations: (2045 30339) Continuing: %D > 15% / 20% * Initial INDB2 INDA2 INDA3 INDB3 INDA4 INDB4 INDA5 INDB5 %RSD>10 1 2 3 4 5 6 7								u/s Blank Conc.	Qualifiers (+/-)
Cont. Cal. Date, Month: Day:		12-7	12-7	12-7	12-7	12-8	12-8	12-8			
COMPOUND:		Time:	1033	1108	1835	1910	0204	0238	0235 1302		
alpha-BHC	OK				OK				OK		
beta-BHC		OK						OK			
delta-BHC		22.1						OK			J-C/-
gamma-BHC (Lindane)					OK				19.7		J-C/-
Heptachlor					OK				18.8		J-C/-
Aldrin	OK				OK				15.3		J-C/-
Heptachlor epoxide					OK				24.4		J-C/-
Endosulfan I					OK				30.1		J-C/-
Dieldrin					OK				58.7		J-C/-
4,4'-DDE		OK		OK					OK		
Endrin	OK		33.3					45.6			J-C/-
Endosufan II					OK				21.4		J-C/-
4,4'-DDD			18.6					OK			J-C/-
Endosufan sulfate			26.6						21.2		J-C/-
4,4'-DDT		OK				OK				34.2	
Methoxychlor					OK				OK		
Endrin Ketone			18.5					OK			J-C/-
alpha-Chlordane			OK					OK			
gamma-Chlordane			OK					OK			
Toxaphene	OK										
Aroclor-1016											
Aroclor-1221											
Aroclor-1232											
Aroclor-1242											
Aroclor-1248											
Aroclor-1254											
Aroclor-1260											
Dibutylchlorodate(surr.)		OK									

* Validation Criteria:

Compound Detected

Compound Undetected

Quantitation Column

%D < 15

%D < 20

Confirmation Column

and %D < 20

or %D < 20

* Please note that column left blank are for standards shown on Form 8. But that were not required to be provided.

TABLE 1
Pesticide/PCB Qualifier Summary
Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date: 12-8-92

Instrument ID: GC16C

Method Blank ID(s): PBLK14

Extract Date(s): 1-3-92

EVAL 34 Enter breakdown / DOT breakdown
 35 20.62 OK
 36 OK OK
 37 OK 22.6

EVAL

34
34
34
35
35
35
35
35
35
36,37
36,37

Sample Identifier:	Hold Time Out		Surr Rec.	Last IND Standard Before Analysis:							
	Ext.	Anal.		<, >	1	2	3	4	5	6	7
SSS1	OK	OK	OK		X						
BHS 19(2)			OK				X				
BHS 20(2)			OK				X				
SSS4DL			D				X				
BHS 28(2)			OK				X				
SSS4			D								X
BHS 21(2)			>							X	
BHS 21(2)DL			>							X	
BHS 30(2)			OK							X	
BHS 29(22)	✓	✓	OK							X	

D = diluted out

PRIMARY COLUMN: DB608		12-6-7-92 Calibrations:							18/16 Blank Conc.	Qualifiers (+/-)
		Initial	IND03	IND03	IND04	IND05	IND06	IND07		
Cont. Cal. Date, Month:		%RSD > 10	1	2	3	4	5	6		
COMPOUND:		Day:	12-7	12-7	12-8	12-8	12-8	12-8		
		Time:	1835	1910	0204	0238	1235	1302		
alpha-BHC		OK					OK			
beta-BHC					OK			OK	3.7	J-8/u-B
delta-BHC					OK			16.6		J-C/-
gamma-BHC (Lindane)		OK				19.7				J-C/-
Heptachlor		OK				18.8				J-C/-
Aldrin	OK	OK				15.3				J-C/-
Heptachlor epoxide		OK				24.4				J-C/- u.s.c.
Endosulfan I		OK				30.1				J-C/- u.s.c.
Dieldrin		OK				58.7				J-C/- u.s.c.
4,4'-DDE					OK			33.8		J-C/- u.s.c.
Endrin	OK				45.6			46.2		J-C/- u.s.c.
Endosulfan II		OK				21.4				J-C/- u.s.c.
4,4'-DDD					OK			OK		J-C/- u.s.c.
Endosulfan sulfate					21.2			26.2		J-C/- u.s.c.
4,4'-DDT	OK	OK				34.2				J-C/- u.s.c.
Methoxychlor		OK				OK				
Endrin Ketone					OK			OK		
alpha-Chlordane					OK			36.2		J-C/- u.s.c.
gamma-Chlordane					OK			33.1		J-C/- u.s.c.
Toxaphene										
Aroclor-1016										
Aroclor-1221										
Aroclor-1232										
Aroclor-1242										
Aroclor-1248										
Aroclor-1254										
Aroclor-1260										
Dibutylchlorodate (surr.)	OK									

* Validation Criteria:

Compound Detected
 Compound Undetected

Quantitation Column

%D < 15
 %D < 20

and
 or

Confirmation Column

%D < 20
 %D < 20

Pesticide/PCB Qualifier Summary
Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date: 12-7-92

Instrument ID: 6C16C

Method Blank ID(s): PBLK02

Extract Date(s): 11-2-92

[illegible]

	Endrin breakdown	DDT breakdown
EVAL 01	33.07	OK
" 02	37.15	OK

PRIMARY COLUMN: DB608		12-6-77/92 Calibrations: (2045) (20339) Initial Continuing: %D > 15% / 20% * %RSD>10								10/2 Blank Conc.	Qualifiers (+/-)
Cont. Cal. Date, Month:	Day:	INDA	INDB	INDC	INDA2						
COMPOUND:	Time:	2229	2303	1033	1108						
alpha-BHC		HI OK	HI OK								
beta-BHC				OK				0.066			
delta-BHC				22.1				J-B/W-F-B			
gamma-BHC (Lindane)								J-C/-			
Heptachlor											
Aldrin	OK										
Heptachlor epoxide											
Endosulfan I											
Dieldrin											
4,4'-DOE				OK							
Endrin	OK			33.3				J-C/-			
Endosufan II											
4,4'-DDD				18.6				J-C/-			
Endosufan sulfate				26.6				J-C/-			
4,4'-DDT	OK										
Methoxychlor											
Endrin Ketone				18.5				J-C/-			
alpha-Chlordane				OK							
gamma-Chlordane				OK							
Toxaphene											
Aroclor-1016											
Aroclor-1221											
Aroclor-1232											
Aroclor-1242											
Aroclor-1248											
Aroclor-1254											
Aroclor-1260											
Dibutylchlorodate (surr.)	OK										

* Validation Criteria:

Compound Detected

Compound Undetected

Quantitation Column

 $\delta D < 15$ $\delta D < 20$

and

or

Confirmation Column $\text{RD} < 20$ $\text{ID} < 20$

Pesticide/PCB Qualifier Summary
Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date: 12-8-92

Instrument ID: GC1GC

Method Blank ID(s): PBLK52

Extract Date(s): 11-2-92

[illegible]

VALB3 } breakdown all OK
" B6 }

[illegible]

* Validation Criteria:

Compound Detected

Compound Undetected

Quantitation Column

ID < 15

3D < 20

and

or

Confirmation Column $\Delta D < 20$ $\delta D < 20$

TABLE 1
Pesticide/PCB Qualifier Summary
Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date: 12-7-92

Instrument ID: GC2GC

Method Blank ID(s): PBLK52

Extract Date(s): 11-2-92

D = diluted out

Sample Identifier:	Hold Time Out		Surr Rec. <, >	Last IND Standard Before Analysis:							
	Ext.	Anal.		1	2	3	4	5	6	7	
BHS 23(2)	OK	OK	OK		X						
BHS 24(2)	OK	OK	>		X						
SSS 5	OK	+1	OK				X				
SSS 6	OK	+1	OK				X				
BHS 22(2)	OK	+1	OK				X				
BHS 26(0) DL	OK	+1	D				X				
BHS 25(4) DL	OK	+1	D				X				
BHS 26(0)	OK	+2	>							X	
BHS 25(4)	OK	+2	>							X	
BHS 27(0)	OK	+2	OK							X	
SSS 2	OK	+2	OK							X	
SSS 3	OK	+2	OK							X	

SECONDARY COLUMN: DB1701		12-6-77/92 Calibrations:							Blank Conc.	Qualifiers (+/-)
		Continuing: %D > 15% / 20% *TARA/B								
Initial		INDB2	INDA2	INDAS	INDB5	INDB6	INDH6	7	mg/kg	
%RSD>10		1	2	3	4	5	6	7		
Cont. Cal. Date, Month:		Day: 12-7	12-7	12-8	12-8	12-8	12-8	12-9		
COMPOUND:		Time: 1206	1244	1540	1613	2322	2355	2403		
alpha-BHC	OK		OK				OK	OK		
beta-BHC					OK			39.6	J-C/-	
delta-BHC					OK			31.4	J-C/-	
gamma-BHC (Lindane)			OK				20.02	OK	J-C/-	
Heptachlor		OK					20.5	OK	J-C/-	
Aldrin	OK		OK				24.3	OK	J-C/-	
Heptachlor epoxide			OK				24.3	OK	J-C/-	
Endosulfan I			OK				27.3	OK	J-C/-	
Dieldrin			OK				30.4	OK	J-C/-	
4,4'-DDE					OK			32.9	J-C/-	
Endrin	OK				54.5			OK	J-C/-	
Endosufan II			27.3				OK	OK	J-C/-	
4,4'-DDD					OK			OK		
Endosufan sulfate					OK			36.9	J-C/-	
4,4'-DDT	23.1		OK				39.0	51.1	J-C/-	
Methoxychlor			OK				30.2	30.6	J-C/-	
Endrin Ketone					OK			41.2	J-C/-	
alpha-Chlordane					OK			33.0	J-C/-	
gamma-Chlordane					OK			33.4	J-C/-	
Toxaphene										
Aroclor-1016										
Aroclor-1221										
Aroclor-1232										
Aroclor-1242										
Aroclor-1248										
Aroclor-1254										
Aroclor-1260										
Dibutylchlorodate(surr.)	OK									

Validation Criteria:

Compound Detected

Compound Undetected

Quantitation Column

%D < 15

%D < 20

and

or

Confirmation Column

%D < 20

%D < 20

* Please note: The column test blank indicates standards shown on Form SE, but that were not as required deliverable

TABLE 1
Pesticide/PCB Qualifier Summary
Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date: 12-8-92

Instrument ID: GC26C

Method Blank ID(s): PBLK14

Extract Date(s): 11-3-92

Sample Identifier:	Hold Time Out		Surr Rec. <, >	Last IND Standard Before Analysis:						
	Ext.	Anal.		1	2	3	4	5	6	7
SSSY 0L	OK	OK	D		X					
BHS 28(2)	OK	OK	OK		X					
SSSY	OK	OK			X					
BHS 21(2)	OK	OK	>		X					
BHS 21(2)DL	OK	OK	>		X					
BHS 30(2)	OK	OK					X			
BHS 29(2.2)	OK	OK					X			
SSSI	OK	OK	OK				X			
BHS 19(2)	OK	OK	OK				X			
BHS 20(2)	OK	OK	OK				X			

SECONDARY COLUMN: DB1701		12-6-7/92 2056 30431 Initial %RSD > 10	Calibrations: Continuing: %D > 15% / 20% *							µg/kg	Blank Conc.	Qualifiers (+/-)
Cont. Cal. Date, Month:		Day:	12-7	12-7	12-8	12-8	12-8	12-8	7			
COMPOUND:		Time:	1206	1244	1540	1613	2322	2355				
alpha-BHC	OK			OK				OK				
beta-BHC						OK				3.7	J-B / u-B	
delta-BHC						OK						
gamma-BHC (Lindane)					OK				20.2		J-C / -u-C	
Heptachlor	OK			OK				20.5			J-C / -u-C	
Aldrin				OK				24.3			J-C / -u-C	
Heptachlor epoxide				OK				29.3			J-C / -u-C	
Endosulfan I				OK				27.3			J-C / -u-C	
Dieldrin	OK			OK				30.4			J-C / -u-C	
4,4'-DDE						OK						
Endrin						54.5					J-C / -u-C	
Endosulfan II					27.3				OK		J-C / -u-C	
4,4'-DDD	23.1					OK						
Endosulfan sulfate						OK						
4,4'-DDT				OK					39.0		J-C / -u-C	
Methoxychlor				OK					30.2		J-C / -u-C	
Endrin Ketone						OK						
alpha-Chlordane						OK						
gamma-Chlordane						OK						
Toxaphene												
Aroclor-1016	OK											
Aroclor-1221												
Aroclor-1232												
Aroclor-1242												
Aroclor-1248												
Aroclor-1254												
Aroclor-1260												
Dibutylchlorodate(surr.)												

Validation Criteria:

Compound Detected

Compound Undetected

Quantitation Column

%D < 15

%D < 20

and

or

Confirmation Column

%D < 20

%D < 20

Pesticide/PCB Qualifier Summary
Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date: 12-7-92

Instrument ID: GC2 GC

Method Blank ID(s): PBLK02

Extract Date(s):

[illegible][illegible]

Validation Criteria:

Compound Detected

Compound Undetected

Quantitation Column

$\%D < 15$

 $\%D < 20$

and

or

Confirmation Column

 $\%D < 20$

$\%D < 20$

TABLE 2 - SURROGATE RECOVERIES Page 1 of 2

VOA FRACTION

A. Sample Numbers	NA														
B. Surrogate(s) exceeding OC limits (show XR)	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	S2	S3
C. Compound less than 10%? (Y/N)															
D. Reanalysis required? (Y/N)															
o If blank, were associated samples reanalyzed? (Y/N)															
E. Sample Number for reanalysis.															
F. Reanalysis within limits? (show % R)															
G. Qualifier, if required.															

OC Limits (XR)

VOA S1 = Toluene-d8
 VOA S2 = Bromofluorobenzene
 VOA S3 = 1,2-Dichloroethane-d4

SOIL WATER

81-117 88-110
 74-121 86-115
 70-121 76-114

Note: The circled sample number is the analysis/reanalysis recommended for use.

PESTICIDE FRACTION

A. Sample Numbers	(1X dil.) BHS FB	(100X dilution) SSS4	(1000X dilution) SSS4 DL	(10X dil.) BHS 24(3)	(100X dil.) BHS 25(4)	(100X dil.) BHS 26(5)
B. OC limits exceeded (show XR)	S1 7	S1 0*	S1 0*	S1 155	S1 189**	S1 254**
C. Qualifier, if applied.	J-S/UJ-S	J-S/UJ-S None	J-S/UJ-S None	J-S/-	None	None

OC Limits (XR)

Pesticide S1 = Dibutylchlorodate

SOIL

20-150

WATER

24-154

* = Diluted out

** = Not qualified due to possible noise integration error.

A:\SMELL\SURROG-1.VK3

TABLE 2 - SURROGATE RECOVERIES Page 1 of 2

VOA FRACTION

NA

A. Sample Numbers

B. Surrogate(s) exceeding
OC limits (show XR)

C. Compound less than 10%? (Y/N)

D. Reanalysis required? (Y/N)

- o If blank, were associated
samples reanalyzed? (Y/N)

E. Sample Number for reanalysis.

F. Reanalysis within limits?
(show X R)

G. Qualifier, if required.

OC Limits (XR)

VOA S1 = Toluene-d8
VOA S2 = Bromofluorobenzene
VOA S3 = 1,2-Dichloroethane-d4

SOIL

WATER

81-117 88-110
74-121 86-115
70-121 76-114

Note: The circled sample number is
the analysis/reanalysis
recommended for use.

PESTICIDE FRACTION

A. Sample Numbers

B. OC limits exceded (show XR)

C. Qualifier, if applied.

OC Limits (XR)

Pesticide S1 = Dibutylchlorodate

SOIL

WATER

20-150 24-154

* = Diluted out

** = Not qualified due to possible noise integration error

A:\SHELL\SURROG-1.M3

ATTACHMENT IV

QUALIFIED SAMPLE RESULTS (FORM 1'S)

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BHS19(2)

Lab Name: E3I

Contract:

Lab Code: E3I

Case No.: CAYUGA 1SAS No.:

SDG No.: BHS22

Matrix: (soil/water) SOIL

Lab Sample ID: 930114-3

Sample wt/vol: 30. (g/mL) G

Lab File ID: E57

Level: (low/med) LOW

Date Received: 10/29/92

% Moisture: not dec. 21. dec. 0.

Date Extracted: 11/ 3/92

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/ 8/92

GPC Cleanup: (Y/N) N pH: 8.4

Dilution Factor: 2.00

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

319-84-6-----ALPHA-BHC	17.	J	
319-85-7-----BETA-BHC	80.	B	J-B
319-86-8-----DELTA-BHC	20.	U	
58-89-9-----GAMMA-BHC	20.	U	
76-44-8-----HEPTACHLOR	20.	U	
309-00-2-----ALDRIN	20.	U	
1024-57-3-----HEPTACHLOR EPOXIDE	20.	U	U5-C
959-98-8-----ENDOSULFAN I	20.	U	U5-C
60-57-1-----DIELDRIN	41.	U	U5-C
72-55-9-----4,4'-DDE	57.		J-C
72-20-8-----ENDRIN	41.	U	R-C
33213-65-9-----ENDOSULFAN II	41.	U	U5-C
72-54-8-----4,4'-DDD	41.	U	
1031-07-8-----ENDOSULFAN SULFATE	41.	U	
50-29-3-----4,4'-DDT	41.	U	U5-C
72-43-5-----METHOXYCHLOR	200.	U	
53494-70-5-----ENDRIN KETONE	19.	J	J-X
5103-71-9-----ALPHA-CHLORDANE	200.	U	
5103-74-2-----GAMMA-CHLORDANE	200.	U	
8001-35-2-----TOXAPHENE	410.	U	
12674-11-2-----AROCLOR-1016	200.	U	
11104-28-2-----AROCLOR-1221	200.	U	
11141-16-5-----AROCLOR-1232	200.	U	
53469-21-9-----AROCLOR-1242	200.	U	
12672-29-6-----AROCLOR-1248	200.	U	
11097-69-1-----AROCLOR-1254	410.	U	
11096-82-5-----AROCLOR-1260	410.	U	

ly 1-21-93

1/29/93

0017

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BHS20(2)

Lab Name: E3I

Contract:

Lab Code: E3I

Case No.: CAYUGA 1SAS No.:

SDG No.: BHS22

Matrix: (soil/water) SOIL

Lab Sample ID: 930114-4

Sample wt/vol: 30. (g/mL) G

Lab File ID: E58

Level: (low/med) LOW

Date Received: 10/29/92

% Moisture: not dec. 6. dec. 0.

Date Extracted: 11/ 3/92

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/ 8/92

GPC Cleanup: (Y/N) N pH: 7.4

Dilution Factor: 2.00

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

319-84-6-----ALPHA-BHC	17.	U	
319-85-7-----BETA-BHC	120.	B	J-B-7
319-86-8-----DELTA-BHC	3.7	J	J-C-28
58-89-9-----GAMMA-BHC	17.	U	
76-44-8-----HEPTACHLOR	17.	U	
309-00-2-----ALDRIN	17.	U	
1024-57-3-----HEPTACHLOR EPOXIDE	17.	U	U5-C-28
959-98-8-----ENDOSULFAN I	17.	U	U5-C-
60-57-1-----DIELDRIN	34.	U	U5-C-
72-55-9-----4,4'-DDE	34.	U	
72-20-8-----ENDRIN	34.	U	U5-C-28
33213-65-9-----ENDOSULFAN II	34.	U	U5-C-
72-54-8-----4,4'-DDD	34.	U	
1031-07-8-----ENDOSULFAN SULFATE	34.	U	
50-29-3-----4,4'-DDT	34.	U	U5-C-28
72-43-5-----METHOXYCHLOR	170.	U	
53494-70-5-----ENDRIN KETONE	34.	U	
5103-71-9-----ALPHA-CHLORDANE	170.	U	
5103-74-2-----GAMMA-CHLORDANE	170.	U	
8001-35-2-----TOXAPHENE	340.	U	
12674-11-2-----AROCLOR-1016	170.	U	
11104-28-2-----AROCLOR-1221	170.	U	
11141-16-5-----AROCLOR-1232	170.	U	
53469-21-9-----AROCLOR-1242	170.	U	
12672-29-6-----AROCLOR-1248	170.	U	
11097-69-1-----AROCLOR-1254	340.	U	
11096-82-5-----AROCLOR-1260	340.	U	

cy 1-21-93

0028

1/29/93

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BHS21(2)

Lab Name: E3I

Contract:

Lab Code: E3I

Case No.: CAYUGA 1SAS No.:

SDG No.: BHS22

Matrix: (soil/water) SOIL

Lab Sample ID: 930114-5

Sample wt/vol: 30. (g/mL) G

Lab File ID: E72

Level: (low/med) LOW

Date Received: 10/29/92

% Moisture: not dec. 22. dec. 0.

Date Extracted: 11/ 3/92

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/ 8/92

GPC Cleanup: (Y/N) N pH: 7.2

Dilution Factor: 100.00

CAS NO.

COMPOUND

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Q

319-84-6-----ALPHA-BHC	12000.		
319-85-7-----BETA-BHC	19000.	B	J-B
319-86-8-----DELTA-BHC	12000.		J-C
58-89-9-----GAMMA-BHC	3500.		J-C
76-44-8-----HEPTACHLOR	1000.	U	
309-00-2-----ALDRIN	1000.	U	
1024-57-3-----HEPTACHLOR EPOXIDE	1000.	U	U.S.-C
959-98-8-----ENDOSULFAN I	1000.	U	U.S.-C
60-57-1-----DIELDRIN	4410.	J	J-C
72-55-9-----4,4'-DDE	2100.	U	
72-20-8-----ENDRIN	1200.	J	J-C
33213-65-9-----ENDOSULFAN II	2100.	U	U.S.-C
72-54-8-----4,4'-DDD	140.	J	
1031-07-8-----ENDOSULFAN SULFATE	2100.	U	
50-29-3-----4,4'-DDT	2100.	U	U.S.-C
72-43-5-----METHOXYCHLOR	10000.	U	
53494-70-5-----ENDRIN KETONE	2100.	U	
5103-71-9-----ALPHA-CHLORDANE	10000.	U	
5103-74-2-----GAMMA-CHLORDANE	10000.	U	
8001-35-2-----TOXAPHENE	21000.	U	
12674-11-2-----AROCLOR-1016	10000.	U	
11104-28-2-----AROCLOR-1221	10000.	U	
11141-16-5-----AROCLOR-1232	10000.	U	
53469-21-9-----AROCLOR-1242	10000.	U	
12672-29-6-----AROCLOR-1248	10000.	U	
11097-69-1-----AROCLOR-1254	21000.	U	
11096-82-5-----AROCLOR-1260	21000.	U	

ly 1-21-93

1/29/92

0037

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BHS21(2) DL

Lab Name: E3I

Contract:

Lab Code: E3I

Case No.: CAYUGA 1SAS No.:

SDG No.: BHS22

Matrix: (soil/water) SOIL

Lab Sample ID: 930114-5

Sample wt/vol: 30. (g/mL) G

Lab File ID: E73

Level: (low/med) LOW

Date Received: 10/29/92

% Moisture: not dec. 22. dec. 0.

Date Extracted: 11/ 3/92

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/ 8/92

GPC Cleanup: (Y/N) N pH: 7.2

Dilution Factor: 1000.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
---------	----------	---	---

319-84-6-----ALPHA-BHC	14000.	
319-85-7-----BETA-BHC	25000.	B
319-86-8-----DELTA-BHC	12000.	
58-89-9-----GAMMA-BHC	3800.	J
76-44-8-----HEPTACHLOR	10000.	U
309-00-2-----ALDRIN	1400.	J
1024-57-3-----HEPTACHLOR EPOXIDE	10000.	U
959-98-8-----ENDOSULFAN I	10000.	U
60-57-1-----DIELDRIN	21000.	U
72-55-9-----4,4'-DDE	21000.	U
72-20-8-----ENDRIN	4100.	J
33213-65-9-----ENDOSULFAN II	21000.	U
72-54-8-----4,4'-DDD	21000.	U
1031-07-8-----ENDOSULFAN SULFATE	21000.	U
50-29-3-----4,4'-DDT	21000.	U
72-43-5-----METHOXYCHLOR	100000.	U
53494-70-5-----ENDRIN KETONE	21000.	U
5103-71-9-----ALPHA-CHLORDANE	100000.	U
5103-74-2-----GAMMA-CHLORDANE	100000.	U
8001-35-2-----TOXAPHENE	210000.	U
12674-11-2-----AROCLOR-1016	100000.	U
11104-28-2-----AROCLOR-1221	100000.	U
11141-16-5-----AROCLOR-1232	100000.	U
53469-21-9-----AROCLOR-1242	100000.	U
12672-29-6-----AROCLOR-1248	100000.	U
11097-69-1-----AROCLOR-1254	210000.	U
11096-82-5-----AROCLOR-1260	210000.	U

(Handwritten: T-B, T-C)

(Handwritten: UJ-C, UJ-C, UJ-C)

(Handwritten: UJ-C, UJ-C)

(Handwritten: UJ-C)

vy 1-21-93

(Handwritten: 1/20/93)

0047

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BHS22 (2)

Lab Name: E3I

Contract:

Lab Code: E3I

Case No.: CAYUGA 1SAS No.:

SDG No.: BHS22

Matrix: (soil/water) SOIL

Lab Sample ID: 930102-5

Sample wt/vol: 30. (g/mL) G

Lab File ID: E46

Level: (low/med) LOW

Date Received: 10/28/92

% Moisture: not dec. 19. dec. 0.

Date Extracted: 11/ 2/92

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/ 7/92

GPC Cleanup: (Y/N) N pH: 7.1

Dilution Factor: 5.00

CAS NO.

COMPOUND

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Q

319-84-6-----ALPHA-BHC	8.0	J
319-85-7-----BETA-BHC	49.	U
319-86-8-----DELTA-BHC	49.	U
58-89-9-----GAMMA-BHC	49.	U
76-44-8-----HEPTACHLOR	49.	U
309-00-2-----ALDRIN	49.	U
1024-57-3-----HEPTACHLOR EPOXIDE	49.	U
959-98-8-----ENDOSULFAN I	49.	U
60-57-1-----DIELDRIN	99.	U
72-55-9-----4,4'-DDE	99.	U
72-20-8-----ENDRIN	99.	U (U.I. 5)
33213-65-9-----ENDOSULFAN II	99.	U
72-54-8-----4,4'-DDD	6.7	J
1031-07-8-----ENDOSULFAN SULFATE	99.	U
50-29-3-----4,4'-DDT	99.	U
72-43-5-----METHOXYCHLOR	79.	J
53494-70-5-----ENDRIN KETONE	99.	U
5103-71-9-----ALPHA-CHLORDANE	490.	U
5103-74-2-----GAMMA-CHLORDANE	490.	U
8001-35-2-----TOXAPHENE	990.	U
12674-11-2-----AROCOR-1016	490.	U
11104-28-2-----AROCOR-1221	490.	U
11141-16-5-----AROCOR-1232	490.	U
53469-21-9-----AROCOR-1242	490.	U
12672-29-6-----AROCOR-1248	490.	U
11097-69-1-----AROCOR-1254	990.	U
11096-82-5-----AROCOR-1260	990.	U

vy 1-21-93

red
1/29/93

0056

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BHS23(2)

Lab Name: E3I

Contract:

Lab Code: E3I

Case No.: CAYUGA 1SAS No.:

SDG No.: BHS22

Matrix: (soil/water) SOIL

Lab Sample ID: 930102-6

Sample wt/vol: 30. (g/mL) G

Lab File ID: E32

Level: (low/med) LOW

Date Received: 10/28/92

Moisture: not dec. 52. dec. 0.

Date Extracted: 11/ 2/92

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/ 7/92

PC Cleanup: (Y/N) N

pH: 6.4

Dilution Factor: 10.00

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

319-84-6-----ALPHA-BHC	390.	
319-85-7-----BETA-BHC	490.	
319-86-8-----DELTA-BHC	170.	U
58-89-9-----GAMMA-BHC	150.	J
76-44-8-----HEPTACHLOR	170.	U
309-00-2-----ALDRIN	170.	U
1024-57-3-----HEPTACHLOR EPOXIDE	170.	U
959-98-8-----ENDOSULFAN I	170.	U
60-57-1-----DIELDRIN	55.	J
72-55-9-----4,4'-DDE	330.	U
72-20-8-----ENDRIN	330.	U (UIC) kel
33213-65-9-----ENDOSULFAN II	330.	U
72-54-8-----4,4'-DDD	330.	U
1031-07-8-----ENDOSULFAN SULFATE	330.	U
50-29-3-----4,4'-DDT	330.	U
72-43-5-----METHOXYCHLOR	1700.	U
53494-70-5-----ENDRIN KETONE	330.	U
5103-71-9-----ALPHA-CHLORDANE	1700.	U
5103-74-2-----GAMMA-CHLORDANE	1700.	U
8001-35-2-----TOXAPHENE	3300.	U
12674-11-2-----AROCLOR-1016	1700.	U
11104-28-2-----AROCLOR-1221	1700.	U
11141-16-5-----AROCLOR-1232	1700.	U
53469-21-9-----AROCLOR-1242	1700.	U
12672-29-6-----AROCLOR-1248	1700.	U
11097-69-1-----AROCLOR-1254	3300.	U
11096-82-5-----AROCLOR-1260	3300.	U

WY 1-21-93

10/28/92

0068

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BHS24(3)

Lab Name: E3I

Contract:

Lab Code: E3I

Case No.: CAYUGA 1SAS No.:

SDG No.: BHS22

Matrix: (soil/water) SOIL

Lab Sample ID: 930102-7

Sample wt/vol: 30. (g/mL) G

Lab File ID: E33

Level: (low/med) LOW

Date Received: 10/28/92

Moisture: not dec. 27. dec. 0.

Date Extracted: 11/ 2/92

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/ 7/92

PC Cleanup: (Y/N) N

pH: 7.2

Dilution Factor: 10.00

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

319-84-6-----ALPHA-BHC	45.	J
319-85-7-----BETA-BHC	280.	
319-86-8-----DELTA-BHC	110.	U
58-89-9-----GAMMA-BHC	110.	U
76-44-8-----HEPTACHLOR	110.	U
309-00-2-----ALDRIN	110.	U
1024-57-3-----HEPTACHLOR EPOXIDE	32.	J
959-98-8-----ENDOSULFAN I	110.	U
60-57-1-----DIELDRIN	220.	U
72-55-9-----4,4'-DDE	220.	U
72-20-8-----ENDRIN	220.	U
33213-65-9-----ENDOSULFAN II	220.	U
72-54-8-----4,4'-DDD	220.	U
1031-07-8-----ENDOSULFAN SULFATE	220.	U
50-29-3-----4,4'-DDT	220.	U
72-43-5-----METHOXYCHLOR	1100.	U
53494-70-5-----ENDRIN KETONE	220.	U
5103-71-9-----ALPHA-CHLORDANE	1100.	U
5103-74-2-----GAMMA-CHLORDANE	1100.	U
8001-35-2-----TOXAPHENE	2200.	U
12674-11-2-----AROCLOR-1016	1100.	U
11104-28-2-----AROCLOR-1221	1100.	U
11141-16-5-----AROCLOR-1232	1100.	U
53469-21-9-----AROCLOR-1242	1100.	U
12672-29-6-----AROCLOR-1248	1100.	U
11097-69-1-----AROCLOR-1254	2200.	U
11096-82-5-----AROCLOR-1260	2200.	U

J-S-7
J-S-7

J-S-7

U-C

LY 1-21-93

12/2/93

0076

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BHS25(4)

Lab Name: E3I

Contract:

Lab Code: E3I

Case No.: CAYUGA 1SAS No.:

SDG No.: BHS22

Matrix: (soil/water) SOIL

Lab Sample ID: 930102-8

Sample wt/vol: 30. (g/mL) G

Lab File ID: E38

Level: (low/med) LOW

Date Received: 10/28/92

% Moisture: not dec. 21. dec. 0.

Date Extracted: 11/ 2/92

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/ 7/92

GPC Cleanup: (Y/N) N pH: 6.8

Dilution Factor: 100.00

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

319-84-6-----ALPHA-BHC	30000.	
319-85-7-----BETA-BHC	47000.	
319-86-8-----DELTA-BHC	62000.	
58-89-9-----GAMMA-BHC	3900.	
76-44-8-----HEPTACHLOR	1000.	U
309-00-2-----ALDRIN	1000.	U
1024-57-3-----HEPTACHLOR EPOXIDE	1000.	U
959-98-8-----ENDOSULFAN I	1000.	U
60-57-1-----DIELDRIN	2000.	U
72-55-9-----4,4'-DDE	2000.	U
72-20-8-----ENDRIN	2000.	U
33213-65-9-----ENDOSULFAN II	2000.	U
72-54-8-----4,4'-DDD	2000.	U
1031-07-8-----ENDOSULFAN SULFATE	2000.	U
50-29-3-----4,4'-DDT	2000.	U
72-43-5-----METHOXYCHLOR	10000.	U
53494-70-5-----ENDRIN KETONE	2000.	U
5103-71-9-----ALPHA-CHLORDANE	10000.	U
5103-74-2-----GAMMA-CHLORDANE	10000.	U
8001-35-2-----TOXAPHENE	20000.	U
12674-11-2-----AROCLOR-1016	10000.	U
11104-28-2-----AROCLOR-1221	10000.	U
11141-16-5-----AROCLOR-1232	10000.	U
53469-21-9-----AROCLOR-1242	10000.	U
12672-29-6-----AROCLOR-1248	10000.	U
11097-69-1-----AROCLOR-1254	20000.	U
11096-82-5-----AROCLOR-1260	20000.	U

J-C

UJ-C

UJ-C

UJ 1-21-93

UJ 1/20/93

0086

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BHS25(4)DL

Lab Name: E3I

Contract:

Lab Code: E3I

Case No.: CAYUGA 1SAS No.:

SDG No.: BHS22

Matrix: (soil/water) SOIL

Lab Sample ID: 930102-8DL

Sample wt/vol: 30. (g/mL) G

Lab File ID: E64

Level: (low/med) LOW

Date Received: 10/28/92

Moisture: not dec. 21. dec. 0.

Date Extracted: 11/ 2/92

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/ 8/92

GPC Cleanup: (Y/N) N pH: 6.8

Dilution Factor: 1000.00

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

319-84-6-----ALPHA-BHC	26000.	
319-85-7-----BETA-BHC	51000.	
319-86-8-----DELTA-BHC	60000.	
58-89-9-----GAMMA-BHC	3700.	J
76-44-8-----HEPTACHLOR	10000.	U
309-00-2-----ALDRIN	10000.	U
1024-57-3-----HEPTACHLOR EPOXIDE	10000.	U
959-98-8-----ENDOSULFAN I	10000.	U
60-57-1-----DIELDRIN	20000.	U
72-55-9-----4,4'-DDE	20000.	U
72-20-8-----ENDRIN	20000.	U
33213-65-9-----ENDOSULFAN II	20000.	U
72-54-8-----4,4'-DDD	20000.	U
1031-07-8-----ENDOSULFAN SULFATE	20000.	U
50-29-3-----4,4'-DDT	20000.	U
72-43-5-----METHOXYCHLOR	100000.	U
53494-70-5-----ENDRIN KETONE	20000.	U
5103-71-9-----ALPHA-CHLORDANE	100000.	U
5103-74-2-----GAMMA-CHLORDANE	100000.	U
8001-35-2-----TOXAPHENE	200000.	U
12674-11-2-----AROCLOR-1016	100000.	U
11104-28-2-----AROCLOR-1221	100000.	U
11141-16-5-----AROCLOR-1232	100000.	U
53469-21-9-----AROCLOR-1242	100000.	U
12672-29-6-----AROCLOR-1248	100000.	U
11097-69-1-----AROCLOR-1254	200000.	U
11096-82-5-----AROCLOR-1260	200000.	U

J-H
J-CH
UT-H
UJ-CH
UJ-CH
UJ-H
UJ-CH
UJ-CH
UJ-H
UJ-H

VY 1-21-93

12/12/92

0095

EPA SAMPLE NO.

BHS26 (0)

Contract:

SDG No. : BHS22

Lab Sample ID: 930102-9

Lab File ID: E71

Date Received: 10/28/92

Date Extracted: 11/ 2/92

Date Analyzed: 12/ 8/92

Dilution Factor: 100.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.

COMPOUND

Q

319-84-6-----ALPHA-BHC	1100.	
319-85-7-----BETA-BHC	120000.	
319-86-8-----DELTA-BHC	7800.	
58-89-9-----GAMMA-BHC	1000.	
76-44-8-----HEPTACHLOR	1000.	U
309-00-2-----ALDRIN	1000.	U
1024-57-3-----HEPTACHLOR EPOXIDE	1000.	U
959-98-8-----ENDOSULFAN I	1000.	U
60-57-1-----DIELDRIN	220.	J
72-55-9-----4,4'-DDE	2100.	U
72-20-8-----ENDRIN	2100.	U
33213-65-9-----ENDOSULFAN II	2100.	U
72-54-8-----4,4'-DDD	2100.	U
1031-07-8-----ENDOSULFAN SULFATE	2100.	U
50-29-3-----4,4'-DDT	2100.	U
72-43-5-----METHOXYCHLOR	10000.	U
53494-70-5-----ENDRIN KETONE	2100.	U
5103-71-9-----ALPHA-CHLORDANE	10000.	U
5103-74-2-----GAMMA-CHLORDANE	10000.	U
8001-35-2-----TOXAPHENE	21000.	U
12674-11-2-----AROCLOR-1016	10000.	U
11104-28-2-----AROCLOR-1221	10000.	U
11141-16-5-----AROCLOR-1232	10000.	U
53469-21-9-----AROCLOR-1242	10000.	U
12672-29-6-----AROCLOR-1248	10000.	U
11097-69-1-----AROCLOR-1254	21000.	U
11096-82-5-----AROCLOR-1260	21000.	U

by 1-21-93

12/11/22/9.3

0103

EPA SAMPLE NO.

BHS26(0)DL

Contract:

SDG No. : BHS22

Lab Sample ID: 930102-9DL

Lab File ID: E63

Date Received: 10/28/92

Date Extracted: 11/ 2/92

Date Analyzed: 12/ 8/92

Dilution Factor: 1000.00

Q

$\begin{array}{c} \text{J-H} \\ \downarrow \\ \text{J-CH} \\ \text{U-T-H} \\ \downarrow \\ \begin{array}{c} \text{U-CH} \\ \text{U-CH} \\ \text{U-H} \\ \text{U-CH} \\ \text{U-CH} \\ \text{U-CH} \\ \text{U-CH} \end{array} \end{array}$

1/29/93

0112

EPA SAMPLE NO.

BHS27 (0)

Contract:

SDG No. : BHS22

Lab Sample ID: 930102-10

Lab File ID: E65

Date Received: 10/28/92

Date Extracted: 11/ 2/92

Date Analyzed: 12/ 8/92

Dilution Factor: 5.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

0

319-84-6-----ALPHA-BHC	15.	J
319-85-7-----BETA-BHC	260.	
319-86-8-----DELTA-BHC	43.	J
58-89-9-----GAMMA-BHC	6.2	J
76-44-8-----HEPTACHLOR	50.	U
309-00-2-----ALDRIN	50.	U
1024-57-3-----HEPTACHLOR EPOXIDE	50.	U
959-98-8-----ENDOSULFAN I	50.	U
60-57-1-----DIELDRIN	100.	U
72-55-9-----4,4'-DDE	100.	U
72-20-8-----ENDRIN	100.	U
33213-65-9-----ENDOSULFAN II	100.	U
72-54-8-----4,4'-DDD	100.	U
1031-07-8-----ENDOSULFAN SULFATE	100.	U
50-29-3-----4,4'-DDT	100.	U
72-43-5-----METHOXYCHLOR	500.	U
53494-70-5-----ENDRIN KETONE	100.	U
5103-71-9-----ALPHA-CHLORDANE	500.	U
5103-74-2-----GAMMA-CHLORDANE	500.	U
8001-35-2-----TOXAPHENE	1000.	U
12674-11-2-----AROCLOR-1016	500.	U
11104-28-2-----AROCLOR-1221	500.	U
11141-16-5-----AROCLOR-1232	500.	U
53469-21-9-----AROCLOR-1242	500.	U
12672-29-6-----AROCLOR-1248	500.	U
11097-69-1-----AROCLOR-1254	1000.	U
11096-82-5-----AROCLOR-1260	1000.	U

VY 1-21-93

12/1
1/29/97

0120

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BHS28(2)

Lab Name: E3I

Contract:

Lab Code: E3I

Case No.: CAYUGA 1SAS No.:

SDG No.: BHS22

Matrix: (soil/water) SOIL

Lab Sample ID: 930114-6

Sample wt/vol: 30. (g/mL) G

Lab File ID: E67

Level: (low/med) LOW

Date Received: 10/29/92

% Moisture: not dec. 9. dec. 0.

Date Extracted: 11/ 3/92

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/ 8/92

GPC Cleanup: (Y/N) N pH: 7.2

Dilution Factor: 2.00

CAS NO.

COMPOUND

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Q

319-84-6-----ALPHA-BHC	9.5	J
319-85-7-----BETA-BHC	36.	B
319-86-8-----DELTA-BHC	18.	U
58-89-9-----GAMMA-BHC	18.	U
76-44-8-----HEPTACHLOR	18.	U
309-00-2-----ALDRIN	18.	U
1024-57-3-----HEPTACHLOR EPOXIDE	18.	U
959-98-8-----ENDOSULFAN I	18.	U
60-57-1-----DIELDRIN	35.	U
72-55-9-----4,4'-DDE	6.1	J
72-20-8-----ENDRIN	4.0	J
33213-65-9-----ENDOSULFAN II	32.	J
72-54-8-----4,4'-DDD	35.	U
1031-07-8-----ENDOSULFAN SULFATE	35.	U
50-29-3-----4,4'-DDT	35.	U
72-43-5-----METHOXYCHLOR	180.	U
53494-70-5-----ENDRIN KETONE	42.	
5103-71-9-----ALPHA-CHLORDANE	180.	U
5103-74-2-----GAMMA-CHLORDANE	180.	U
8001-35-2-----TOXAPHENE	350.	U
12674-11-2-----AROCOR-1016	180.	U
11104-28-2-----AROCOR-1221	180.	U
11141-16-5-----AROCOR-1232	180.	U
53469-21-9-----AROCOR-1242	180.	U
12672-29-6-----AROCOR-1248	180.	U
11097-69-1-----AROCOR-1254	350.	U
11096-82-5-----AROCOR-1260	350.	U

(J-B) 1/2

(J-C) 1/2

(J-C) 1/2

1/21/93

1/29/93

0129

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BHS29(2.2)

Lab Name: E3I

Contract:

Lab Code: E3I

Case No.: CAYUGA 1SAS No.:

SDG No.: BHS22

Matrix: (soil/water) SOIL

Lab Sample ID: 930114-7

Sample wt/vol: 30. (g/mL) G

Lab File ID: E76

Level: (low/med) LOW

Date Received: 10/29/92

% Moisture: not dec. 10. dec. 0.

Date Extracted: 11/ 3/92

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/ 8/92

GPC Cleanup: (Y/N) N pH: 6.8

Dilution Factor: 1.00

CAS NO.

COMPOUND

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Q

319-84-6-----ALPHA-BHC	6.9	J	
319-85-7-----BETA-BHC	36.	B	J-B
319-86-8-----DELTA-BHC	3.6	J	J-C
58-89-9-----GAMMA-BHC	8.9	U	
76-44-8-----HEPTACHLOR	8.9	U	
309-00-2-----ALDRIN	8.9	U	
1024-57-3-----HEPTACHLOR EPOXIDE	8.9	U	UJ-C
959-98-8-----ENDOSULFAN I	8.9	U	UJ-C
60-57-1-----DIELDRIN	18.	U	UJ-C
72-55-9-----4,4'-DDE	18.	U	
72-20-8-----ENDRIN	5.6	J	J-C
33213-65-9-----ENDOSULFAN II	18.	U	UJ-C
72-54-8-----4,4'-DDD	18.	U	
1031-07-8-----ENDOSULFAN SULFATE	4.5	J	J-C
50-29-3-----4,4'-DDT	18.	U	UJ-C
72-43-5-----METHOXYCHLOR	89.	U	
53494-70-5-----ENDRIN KETONE	23.		
5103-71-9-----ALPHA-CHLORDANE	89.	U	
5103-74-2-----GAMMA-CHLORDANE	89.	U	
8001-35-2-----TOXAPHENE	180.	U	
12674-11-2-----AROCLOR-1016	89.	U	
11104-28-2-----AROCLOR-1221	89.	U	
11141-16-5-----AROCLOR-1232	89.	U	
53469-21-9-----AROCLOR-1242	89.	U	
12672-29-6-----AROCLOR-1248	89.	U	
11097-69-1-----AROCLOR-1254	180.	U	
11096-82-5-----AROCLOR-1260	180.	U	

4/1-21-93

1/29/93

0139

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BHS30(2)

Lab Name: E3I

Contract:

Lab Code: E3I

Case No.: CAYUGA 1SAS No.:

SDG No.: BHS22

Matrix: (soil/water) SOIL

Lab Sample ID: 930114-8

Sample wt/vol: 30. (g/mL) G

Lab File ID: E75

Level: (low/med) LOW

Date Received: 10/29/92

Moisture: not dec. 11. dec. 0.

Date Extracted: 11/ 3/92

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/ 8/92

SPC Cleanup: (Y/N) N pH: 7.4

Dilution Factor: 1.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.

COMPOUND

Q

319-84-6-----ALPHA-BHC	2.9	J
319-85-7-----BETA-BHC	11.	B
319-86-8-----DELTA-BHC	9.0	U
58-89-9-----GAMMA-BHC	9.0	U
76-44-8-----HEPTACHLOR	9.0	U
309-00-2-----ALDRIN	9.0	U
1024-57-3-----HEPTACHLOR EPOXIDE	9.0	U
959-98-8-----ENDOSULFAN I	9.0	U
60-57-1-----DIELDRIN	18.	U
72-55-9-----4,4'-DDE	1.8	J
72-20-8-----ENDRIN	6.7	J
33213-65-9-----ENDOSULFAN II	18.	U
72-54-8-----4,4'-DDD	18.	U
1031-07-8-----ENDOSULFAN SULFATE	18.	U
50-29-3-----4,4'-DDT	18.	U
72-43-5-----METHOXYCHLOR	90.	U
53494-70-5-----ENDRIN KETONE	18.	U
5103-71-9-----ALPHA-CHLORDANE	90.	U
5103-74-2-----GAMMA-CHLORDANE	90.	U
8001-35-2-----TOXAPHENE	180.	U
12674-11-2-----AROCOR-1016	90.	U
11104-28-2-----AROCOR-1221	90.	U
11141-16-5-----AROCOR-1232	90.	U
53469-21-9-----AROCOR-1242	90.	U
12672-29-6-----AROCOR-1248	90.	U
11097-69-1-----AROCOR-1254	180.	U
11096-82-5-----AROCOR-1260	180.	U

UT-B⁴⁷

U-C⁴⁷ pen

U-C⁴⁷

U-C⁴⁷

U-C⁴⁷ pen

U-C⁴⁷ pen

VY1-21-93

12/11/93

0150

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SSS1

Lab Name: E3I

Contract:

Lab Code: E3I

Case No.: CAYUGA 1SAS No.:

SDG No.: BHS22

Matrix: (soil/water) SOIL

Lab Sample ID: 930114-1

Sample wt/vol: 30. (g/mL) G

Lab File ID: E52

Level: (low/med) LOW

Date Received: 10/29/92

% Moisture: not dec. 14. dec. 0.

Date Extracted: 11/ 3/92

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/ 8/92

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

CAS NO.

COMPOUND

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Q

319-84-6-----ALPHA-BHC	13.		
319-85-7-----BETA-BHC	22.	B	(J-B)
319-86-8-----DELTA-BHC	9.3	U	
58-89-9-----GAMMA-BHC	9.3	U	
76-44-8-----HEPTACHLOR	9.3	U	
309-00-2-----ALDRIN	9.3	U	
1024-57-3-----HEPTACHLOR EPOXIDE	9.3	U	(U-C) 12/1
959-98-8-----ENDOSULFAN I	9.3	U	
60-57-1-----DIELDRIN	19.	U	
72-55-9-----4,4'-DDE	35.		
72-20-8-----ENDRIN	19.	U	(R-C) 12/1
33213-65-9-----ENDOSULFAN II	19.	U	(U-C) 12/1
72-54-8-----4,4'-DDD	24.		
1031-07-8-----ENDOSULFAN SULFATE	19.	U	
50-29-3-----4,4'-DDT	51.		(J-C) 12/1
72-43-5-----METHOXYCHLOR	93.	U	
53494-70-5-----ENDRIN KETONE	9.8	J	(J-N) 12/1
5103-71-9-----ALPHA-CHLORDANE	93.	U	
5103-74-2-----GAMMA-CHLORDANE	93.	U	
8001-35-2-----TOXAPHENE	190.	U	
12674-11-2-----AROCLOR-1016	93.	U	
11104-28-2-----AROCLOR-1221	93.	U	
11141-16-5-----AROCLOR-1232	93.	U	
53469-21-9-----AROCLOR-1242	93.	U	
12672-29-6-----AROCLOR-1248	93.	U	
11097-69-1-----AROCLOR-1254	190.	U	
11096-82-5-----AROCLOR-1260	190.	U	

11-21-93

12/1/93

0160

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SSS2

Lab Name: E3I

Contract:

Lab Code: E3I

Case No.: CAYUGA 1SAS No.:

SDG No.: BHS22

Matrix: (soil/water) SOIL

Lab Sample ID: 930102-1

Sample wt/vol: 30. (g/mL) G

Lab File ID: E40

Level: (low/med) LOW

Date Received: 10/28/92

% Moisture: not dec. 15. dec. 0.

Date Extracted: 11/ 2/92

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/ 7/92

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

319-84-6-----ALPHA-BHC	8.4	J	
319-85-7-----BETA-BHC	37.		
319-86-8-----DELTA-BHC	9.4	U	(U-C) 1001
58-89-9-----GAMMA-BHC	6.5	J	
76-44-8-----HEPTACHLOR	9.4	U	
309-00-2-----ALDRIN	9.4	U	
1024-57-3-----HEPTACHLOR EPOXIDE	.73	J	(J-C) 1001
959-98-8-----ENDOSULFAN I	9.4	U	(J-C) 1001
60-57-1-----DIELDRIN	7.2	J	
72-55-9-----4,4'-DDE	19.	U	
72-20-8-----ENDRIN	19.	U	(U-C) 1001
33213-65-9-----ENDOSULFAN II	19.	U	
72-54-8-----4,4'-DDD	7.9	J	(J-C) 1001
1031-07-8-----ENDOSULFAN SULFATE	19.	U	(U-C) 1001
50-29-3-----4,4'-DDT	19.	U	(U-C) 1001
72-43-5-----METHOXYCHLOR	94.	U	
53494-70-5-----ENDRIN KETONE	19.	U	
5103-71-9-----ALPHA-CHLORDANE	94.	U	
5103-74-2-----GAMMA-CHLORDANE	94.	U	
8001-35-2-----TOXAPHENE	190.	U	
12674-11-2-----AROCLOR-1016	94.	U	
11104-28-2-----AROCLOR-1221	94.	U	
11141-16-5-----AROCLOR-1232	94.	U	
53469-21-9-----AROCLOR-1242	94.	U	
12672-29-6-----AROCLOR-1248	94.	U	
11097-69-1-----AROCLOR-1254	190.	U	
11096-82-5-----AROCLOR-1260	190.	U	

WY 1-2-93

12/1/93

0170

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SSS3

Lab Name: E3I

Contract:

Lab Code: E3I

Case No.: CAYUGA 1SAS No.:

SDG No.: BHS22

Matrix: (soil/water) SOIL

Lab Sample ID: 930102-2

Sample wt/vol: 30. (g/mL) G

Lab File ID: E41

Level: (low/med) LOW

Date Received: 10/28/92

% Moisture: not dec. 21. dec. 0.

Date Extracted: 11/ 2/92

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/ 7/92

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

CAS NO.

COMPOUND

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Q

319-84-6-----ALPHA-BHC	10.	U
319-85-7-----BETA-BHC	10.	U
319-86-8-----DELTA-BHC	8.1	J
58-89-9-----GAMMA-BHC	10.	U
76-44-8-----HEPTACHLOR	10.	U
309-00-2-----ALDRIN	10.	U
1024-57-3-----HEPTACHLOR EPOXIDE	10.	U
959-98-8-----ENDOSULFAN I	10.	U
60-57-1-----DIELDRIN	20.	U
72-55-9-----4,4'-DDE	2.1	J
72-20-8-----ENDRIN	20.	U
33213-65-9-----ENDOSULFAN II	20.	U
72-54-8-----4,4'-DDD	20.	U
1031-07-8-----ENDOSULFAN SULFATE	20.	U
50-29-3-----4,4'-DDT	20.	U
72-43-5-----METHOXYCHLOR	100.	U
53494-70-5-----ENDRIN KETONE	20.	U
5103-71-9-----ALPHA-CHLORDANE	100.	U
5103-74-2-----GAMMA-CHLORDANE	100.	U
8001-35-2-----TOXAPHENE	200.	U
12674-11-2-----AROCLOR-1016	100.	U
11104-28-2-----AROCLOR-1221	100.	U
11141-16-5-----AROCLOR-1232	100.	U
53469-21-9-----AROCLOR-1242	100.	U
12672-29-6-----AROCLOR-1248	100.	U
11097-69-1-----AROCLOR-1254	200.	U
11096-82-5-----AROCLOR-1260	200.	U

J-C

U-C

U-C

U-C

WY 1-21-93

1/29/93

0179

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SSS4

Lab Name: E3I

Contract:

Lab Code: E3I

Case No.: CAYUGA 1SAS No.:

SDG No.: BHS22

Matrix: (soil/water) SOIL

Lab Sample ID: 930114-2

Sample wt/vol: 30. (g/mL) G

Lab File ID: E70

Level: (low/med) LOW

Date Received: 10/29/92

% Moisture: not dec. 19. dec. 0.

Date Extracted: 11/ 3/92

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/ 8/92

GPC Cleanup: (Y/N) N pH: 6.9

Dilution Factor: 100.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
---------	----------	---	---

319-84-6-----ALPHA-BHC	190.	J
319-85-7-----BETA-BHC	16000.	B
319-86-8-----DELTA-BHC	990.	U
58-89-9-----GAMMA-BHC	990.	U
76-44-8-----HEPTACHLOR	990.	U
309-00-2-----ALDRIN	990.	U
1024-57-3-----HEPTACHLOR EPOXIDE	990.	U
959-98-8-----ENDOSULFAN I	990.	U
60-57-1-----DIELDRIN	70.	J
72-55-9-----4,4'-DDE	2000.	U
72-20-8-----ENDRIN	2000.	U
33213-65-9-----ENDOSULFAN II	2000.	U
72-54-8-----4,4'-DDD	2000.	U
1031-07-8-----ENDOSULFAN SULFATE	2000.	U
50-29-3-----4,4'-DDT	2000.	U
72-43-5-----METHOXYCHLOR	9900.	U
53494-70-5-----ENDRIN KETONE	2000.	U
5103-71-9-----ALPHA-CHLORDANE	9900.	U
5103-74-2-----GAMMA-CHLORDANE	9900.	U
8001-35-2-----TOXAPHENE	20000.	U
12674-11-2-----AROCLOR-1016	9900.	U
11104-28-2-----AROCLOR-1221	9900.	U
11141-16-5-----AROCLOR-1232	9900.	U
53469-21-9-----AROCLOR-1242	9900.	U
12672-29-6-----AROCLOR-1248	9900.	U
11097-69-1-----AROCLOR-1254	20000.	U
11096-82-5-----AROCLOR-1260	20000.	U

J-8

U-C
U-C
J-C

U-C
U-C

44-1-2193

0188

1/21/93

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SSS4 DL

Lab Name: E3I

Contract:

Lab Code: E3I

Case No.: CAYUGA 1SAS No.:

SDG No.: BHS22

Matrix: (soil/water) SOIL

Lab Sample ID: 930114-2DL

Sample wt/vol: 30. (g/mL) G

Lab File ID: E66

Level: (low/med) LOW

Date Received: 10/29/92

Moisture: not dec. 19. dec. 0.

Date Extracted: 11/ 3/92

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/ 8/92

EPC Cleanup: (Y/N) N pH: 6.9

Dilution Factor: 1000.00

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

319-84-6-----ALPHA-BHC	9900.	U	
319-85-7-----BETA-BHC	16000.	B	J-B
319-86-8-----DELTA-BHC	9900.	U	
58-89-9-----GAMMA-BHC	9900.	U	
76-44-8-----HEPTACHLOR	9900.	U	
309-00-2-----ALDRIN	2000.	J	
1024-57-3-----HEPTACHLOR EPOXIDE	9900.	U	U-C
959-98-8-----ENDOSULFAN I	9900.	U	
60-57-1-----DIELDRIN	20000.	U	
72-55-9-----4,4'-DDE	20000.	U	
72-20-8-----ENDRIN	3200.	J	J-C
33213-65-9-----ENDOSULFAN II	20000.	U	U-C
72-54-8-----4,4'-DDD	20000.	U	
1031-07-8-----ENDOSULFAN SULFATE	20000.	U	
50-29-3-----4,4'-DDT	20000.	U	
72-43-5-----METHOXYCHLOR	99000.	U	
53494-70-5-----ENDRIN KETONE	20000.	U	
5103-71-9-----ALPHA-CHLORDANE	99000.	U	
5103-74-2-----GAMMA-CHLORDANE	99000.	U	
8001-35-2-----TOXAPHENE	200000.	U	
12674-11-2-----AROCLOR-1016	99000.	U	
11104-28-2-----AROCLOR-1221	99000.	U	
11141-16-5-----AROCLOR-1232	99000.	U	
53469-21-9-----AROCLOR-1242	99000.	U	
12672-29-6-----AROCLOR-1248	99000.	U	
11097-69-1-----AROCLOR-1254	200000.	U	
11096-82-5-----AROCLOR-1260	200000.	U	

0197

vy 1-21-93

12/11/93

EPA SAMPLE NO.

SSS5

Contract:

SDG No. : BHS22

Lab Sample ID: 930102-3

Lab File ID: E44

Date Received: 10/28/92

Date Extracted: 11/ 2/92

Date Analyzed: 12/ 7/92

Dilution Factor: 1.00

Q

319-84-6-----ALPHA-BHC	9.5	U
319-85-7-----BETA-BHC	5.0	J
319-86-8-----DELTA-BHC	9.5	U
58-89-9-----GAMMA-BHC	9.5	U
76-44-8-----HEPTACHLOR	9.5	U
309-00-2-----ALDRIN	9.5	U
1024-57-3-----HEPTACHLOR EPOXIDE	6.7	J
959-98-8-----ENDOSULFAN I	9.5	U
60-57-1-----DIELDRIN	19.	U
72-55-9-----4,4'-DDE	7.3	J
72-20-8-----ENDRIN	19.	U
33213-65-9-----ENDOSULFAN II	19.	U
72-54-8-----4,4'-DDD	19.	U
1031-07-8-----ENDOSULFAN SULFATE	19.	U
50-29-3-----4,4'-DDT	19.	U
72-43-5-----METHOXYCHLOR	95.	U
53494-70-5-----ENDRIN KETONE	19.	U
5103-71-9-----ALPHA-CHLORDANE	95.	U
5103-74-2-----GAMMA-CHLORDANE	95.	U
8001-35-2-----TOXAPHENE	190.	U
12674-11-2-----AROCLOR-1016	95.	U
11104-28-2-----AROCLOR-1221	95.	U
11141-16-5-----AROCLOR-1232	95.	U
53469-21-9-----AROCLOR-1242	95.	U
12672-29-6-----AROCLOR-1248	95.	U
11097-69-1-----AROCLOR-1254	190.	U
11096-82-5-----AROCLOR-1260	190.	U

VY 1-21-93

0205

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BHSFB

Lab Name: E3I

Contract:

Lab Code: E3I

Case No.: CAYUGA 1SAS No.:

SDG No.: BHS22

Matrix: (soil/water) WATER

Lab Sample ID: 930102-11

Sample wt/vol: 1000. (g/mL)ML

Lab File ID: E20

Level: (low/med) LOW

Date Received: 10/28/92

Moisture: not dec.100. dec. 0.

Date Extracted: 11/ 2/92

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 12/ 7/92

PC Cleanup: (Y/N) N

pH: 5.0

Dilution Factor: 1.00

CAS NO.

COMPOUND

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Q

319-84-6-----	ALPHA-BHC	.050	U	UJ-S
319-85-7-----	BETA-BHC	.050	U	
319-86-8-----	DELTA-BHC	.050	U	
58-89-9-----	GAMMA-BHC	.050	U	
76-44-8-----	HEPTACHLOR	.050	U	
309-00-2-----	ALDRIN	.050	U	
1024-57-3-----	HEPTACHLOR EPOXIDE	.050	U	
959-98-8-----	ENDOSULFAN I	.050	U	
60-57-1-----	DIELDRIN	.10	U	
72-55-9-----	4,4'-DDE	.10	U	
72-20-8-----	ENDRIN	.10	U	
33213-65-9-----	ENDOSULFAN II	.10	U	
72-54-8-----	4,4'-DDD	.10	U	
1031-07-8-----	ENDOSULFAN SULFATE	.10	U	
50-29-3-----	4,4'-DDT	.10	U	
72-43-5-----	METHOXYCHLOR	.50	U	
53494-70-5-----	ENDRIN KETONE	.10	U	
5103-71-9-----	ALPHA-CHLORDANE	.50	U	
5103-74-2-----	GAMMA-CHLORDANE	.50	U	
8001-35-2-----	TOXAPHENE	1.0	U	
12674-11-2-----	AROCLOR-1016	.50	U	
11104-28-2-----	AROCLOR-1221	.50	U	
11141-16-5-----	AROCLOR-1232	.50	U	
53469-21-9-----	AROCLOR-1242	.50	U	
12672-29-6-----	AROCLOR-1248	.50	U	
11097-69-1-----	AROCLOR-1254	1.0	U	
11096-82-5-----	AROCLOR-1260	1.0	U	

UJ-21-93

0224

DATA VALIDATION - METALS

Site Name: Cayuga Island Laboratory Name: E3I
 Reviewer: R Petrella Date of Review: 1/12/93

I. Holding times

Lead

Sample I.D.	Date Received	Date Digested	Date Analyzed	Holding Time Exceeded?
BHS19	10/29	11/13/92	11/17	No
20	10/29		11/29	
21	10/29		11/27	
22	10/28		11/27	
23	10/28		11/27	
24	10/28		11/17	
25	10/28		11/27	
26	10/28		11/17	
27	10/28		11/27	
28	10/29		11/27	
29	10/29		11/27	
30	10/29		11/29	
FB	10/28	11/6/92	11/27	
SSS 1	10/29	11/13/92	11/27	
2	10/28		11/29	
3	10/28		11/27	
4	10/29		11/17	
5	10/28		11/27	
6	10/28		11/27	

DATA VALIDATION - METALS

Site Name: Cayuga Island Laboratory Name: E3I
 Reviewer: R. Atulla Date of Review: 1/12/93

I. Holding times

Mercury

Sample I.D.	Date Received	Date Digested	Date Analyzed	Holding Time Exceeded?
BHS19	10/29	11/16	11/16	NO
20	10/29	11/16	11/16	
21	10/29	11/16	11/16	
22	10/28	11/9	11/10	
23	10/28	11/16	11/16	
24	10/28	11/16	11/16	
25	10/28	11/16	11/16	
26	10/28	11/16	11/16	
27	10/28	11/9	11/10	
28	10/29	11/16	11/16	
29	10/29	11/10	11/10	
30	10/29	11/10	11/10	
FB	10/28	11/16	11/16	
SSS 1	10/29	11/9	11/10	
2	10/28	11/9	11/10	
3	10/28	11/9	11/10	
4	10/29	11/9	11/10	
5	10/28	11/9	11/10	
6	10/28	11/9	11/10	

DATA VALIDATION - METALS

Site Name: Cayuga Island Laboratory Name: ESI
Reviewer: R. Petrella Date of Review: 1/12/93
Associated Samples: all on cover

II. Initial Calibration

1. Were all initial instrument calibrations performed?

☒ Yes

☐ No

Comments:

2. Were the initial calibration verification standards analyzed at the contract specified frequency?

☒ Yes

☐ No

Comments:

3. Were the initial calibration results within the control limits listed below?

For tin and mercury: 80-120% of the true value
For all other metals: 90-110% of the true value

☒ Yes

☐ No

If "No", note analytes _____

DATA VALIDATION - METALS

Site Name: Cayuga Island Laboratory Name: E3I
Reviewer: R. Petrella Date of Review: 1/12/93
Associated Samples: all on cover

III. Continuing Calibration

1. Were the continuing calibration verification standards analyzed at the contract specified frequency?

Yes

No

Comments:

2. Were the continuing calibration results within the control limits listed below?

For tin and mercury: 80-120% of the true value
For all other metals: 90-110% of the true value

Yes

No

If "No", note analytes _____

DATA VALIDATION - METALS

Site Name: Cayuga Island Laboratory Name: ESI
Reviewer: R. Petrella Date of Review: 1/12/93

IV. Blank Summary

A. Method Blanks

1. Was a method blank prepared and analyzed at the contract specified frequency?

Yes

No

2. Were all ~~the~~ analytes below the CRDL in the method blank?

Yes

No

Comments:

B. Calibration Blanks

1. Were all initial and continuing calibration blanks analyzed at the contract specified frequency?

Yes

No

2. Were all the analytes below the CRDL in all the calibration blanks?

Yes

No

Comments:

DATA VALIDATION - METALS

Site Name: Cruz Island Laboratory Name: ESI
Reviewer: R. Petrella Date of Review: 1/12/93

V. Duplicate Analysis

1. Was a duplicate prepared and analyzed at the contract specified frequency?

☒ Yes

☐ No

Comments:

2. Were control limits for the relative percent differences (RPD) met for each analyte?

☒ Yes

☐ No

Comments:

Hg OK Pb 60.5% (Furnace), 119.2 (ICP)

For sample values >5 times the CRDL, the RPD control limit is $\pm 20\%$.

For sample values <5 times the CRDL, the RPD control limit is $\pm \text{CRDL}$.

If sample results were outside of the control limits, all data associated with that duplicate sample should have been flagged with a "**".

DATA VALIDATION - METALS

Site Name: Cayuga Island Laboratory Name: E 3I
Reviewer: R Petrella Date of Review: 1/12/93

VI. Matrix Spike Analysis

1. Was a matrix spike prepared and analyzed at the contract specified frequency?

Yes

No

Comments:

2. Were the matrix spike recoveries within the contract specified control limits (75-125%)?

Yes

No

If "No", note analytes Furnace 12.5 -
ICP 229

Data should have been flagged with "N" for analytes out of control limits. If the sample concentration exceeds the spike concentration by a factor of four or more, no flag is required.

* For Furnace Pb Results considered biased low
BHS 20, 21, 22, 23, 25, 27, 28, 29
30 FB, SSS 1, 2, 3, 5, 6
* For ICP Pb results biased high
BHS 19, 24, 26, SSS 4

DATA VALIDATION - METALS

Site Name: Cayuga Island Laboratory Name: ESI
Reviewer: Elphella Date of Review: 1/12/93

VII. ICP Interference Check Sample Summary

1. Was the ICP serial dilution analyzed at the contract specified frequency?

Yes

No

Comments:

2. Were the serial dilution differences within the contract specified limits of $\pm 10\%$?

Yes

No

Comments

3. Was the ICP CRDL check standard analyzed at the contract specified frequency for the analytes required?

Yes

No

Comments

DATA VALIDATION - METALS

Site Name: Cayuga Island Laboratory Name: E 3I
Reviewer: R Petrella Date of Review: 1/12/93

VII. ICP Interference Check Sample Summary (continued):

4. Was the ICP interference check sample analyzed at the contract specified frequency?

☒ Yes

☐ No

Comments: _____

5. Were the ICP interference check sample results within the control limit of $\pm$ w-20% of the mean value?

☒ Yes

☐ No

If "No", note analytes _____

DATA VALIDATION - METALS

Site Name: Cayuga Island Laboratory Name: ESI
Reviewer: R Petrella Date of Review: 1/12/93

VIII. Laboratory Control Sample Analysis

1. Was a laboratory control sample analyzed at the contract required frequency?

☒ Yes

☐ No

Comments:

2. Were the percent recoveries within the control limits of 80-120% (except for Ag and Sb) for each analyte?

☒ Yes

☐ No

Comments

DATA VALIDATION - METALS

Site Name: Cayuga Island Laboratory Name: E3I
Reviewer: R. P. Villa Date of Review: 1/12/93

IX. Furnace Atomic Absorption Analysis

1. Were duplicate injections performed for all analytes (except for the Method of Standard Addition [MSA] which requires single injections only)?

Yes

No

Comments:

2. Where the concentrations were above the CRDL, did the two runs agree within 20% of the relative standard deviations for each analyte?

Yes

No

If "No", note analytes _____ and check to see if the analytes were run again. If readings are still outside the control limits, all data associated with that analysis should have been flagged with an "M".

3. Did the preparation blank analysis produce spike recoveries of 85-115%?

Yes

No

Comments

DATA VALIDATION - METALS

Site Name: Cayuga Island Laboratory Name: E3I
Reviewer: R. Petrella Date of Review: 1/12/93

IX. Furnace Atomic Absorption Analysis (continued):

4. Were analysis (post digest) spikes performed on all required samples and concentration levels (2x CRDL)?

Yes

No

Comments

5. For those samples whose initial spike recovery was less than 40%, was sample diluted and respiking performed?

NA. Yes

No

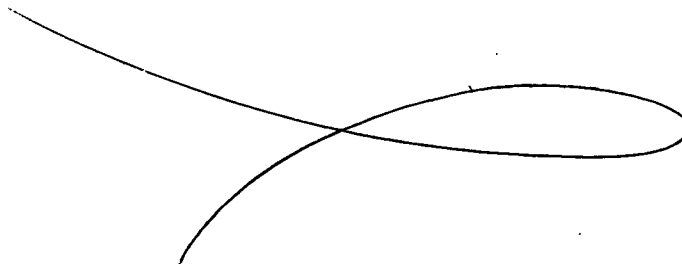
Comments

6. Was the MSA performed at the contract specified frequency and did it follow the contract specified criteria?

NA. Yes

No

Comments

A handwritten signature or scribble consisting of a single continuous line that forms a loop and extends upwards and to the left.

RECEIVED
MAY 21 1993
N.Y.S. DEPT. OF
ENVIRONMENTAL CONSERVATION
REGION 9